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Equipment design specifications are presented relating to tables of all kinds, counters, sinks and drainboards, bins, shelves, drawers, hoods and similar kitchen appurtenances, not including baking, roasting, toasting, broiling or frying equipment, food preparation machinery such as slicers, choppers, and cutters, mixers and grinders, steam cooking equipment and peelers, dishwashing machines, or refrigerators and refrigerating equipment. Many of the latter items are covered in other NSF standards. Specifications include--(1) definitions, (2) materials, and (3) design and construction. (RH)

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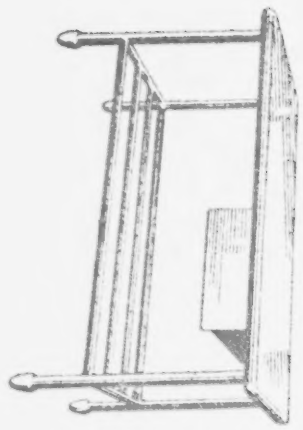

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SEAL OF APPROVAL

To identify equipment that has met NSF Standard
No. 2, Food Service Equipment.
(Colors: blue, gray and white.)

NATIONAL SANITATION FOUNDATION

Standard Number 2

FOOD SERVICE EQUIPMENT AND APPURTENANCES

As Revised By

THE JOINT COMMITTEE ON FOOD EQUIPMENT STANDARDS

Reprinted as Amended

April 1965

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THE NATIONAL SANITATION FOUNDATION

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OFFICE OF EDUCATION

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This is the second in a series of nationally uniform sanitation standards established by the National Sanitation Foundation. The first Standard related to Soda Fountain and Luncheonette Equipment. Subsequent to Standard No. 2 the following have been developed:

Standard No. 3—Spray-Type Dishwashing Machines (Includes Dish and Glass Washing Equip.)

Standard No. 4—Gas and Electric Commercial Cooking and Warming Equipment

Standard No. 5—Gas and Electric Commercial Hot Water Generating Equipment

Standard No. 6—Dispensing Freezers

Standard No. 7—Commercial Refrigerators and Storage Freezers

Standard No. 8—Commercial Powered Food Preparation Equipment

The National Sanitation Foundation

Purpose and Organization

IN 1944, A SMALL GROUP of industrial and public health leaders were discussing mutual problems involving sanitation. They realized that more solutions to modern sanitation problems affecting industry and the public health could be developed through mutual understanding and cooperative action than through ordinances, inspections and law enforcement alone.

It occurred to them that great strides could result from the creation of an independent but authoritative liaison organization which would be a clearing house through which business and industry and health authorities could work together for the solution of their common problems and for the common good.

They foresaw that, through such an organization, they could jointly seek new facts in sanitary science to bring it up to date with technological advances of industry and with modern problems of the health officer in the field.

They could sponsor educational programs and sanitation services which would win everyone's cooperation in a nation-wide program designed to promote superior sanitation in modern products and services, and in the daily lives of the people.

Thus was born the National Sanitation Foundation. The Foundation is a non-profit, non-commercial organization seeking solutions to all problems involving cleanliness. It is dedicated to the prevention of illness, the promotion of health and the enrichment of the quality of American living through the improvement of the physical, biological and social environment in which we live today.

Distinguished representatives of the public health profession, of business and industry, and of the public serve on its Board of Trustees, Council of Public Health Consultants, Industrial Advisory Board and various committees.

The National Sanitation Foundation is endorsed by health agencies, both official and voluntary. More than 350 industrial and business firms have contributed nearly three quarters of a million dollars to its support. The Foundation is now in its twenty-first year of operation.

PREFACE

This Standard, relating to Food Service Equipment and Appurtenances, is one in a series of N.S.F. Standards. These Standards are issued in recognition of the long-felt need for a common understanding of the problems of sanitation involving industry and administrative health officials whose obligation it is to enforce regulations.

Sanitation in the United States, or in any country, can be as good or as bad as:

1. The people who work at it; i.e., sanitation personnel
2. The joint effort of public health, industry, and business
3. The education, or the understanding, of the public

It is a mistake to think of any one of the three factors as more or less important than the other—as much a mistake as saying that ignition is more or less important than carburetion in the operation of an engine. How the three factors are developed and coordinated will determine the success or failure of national, state, and local efforts to improve sanitation.

The National Sanitation Foundation offers the key to securing the much needed uniformity in the field of sanitation. The aim also is to improve environmental health as well as sanitation.

This revised Standard has gone through many drafts during the years of its preparation and use. It is the result of considerable study on the part of health men, consultations with technical representatives of industry, and field investigations of the National Sanitation Foundation's staff.

The improvement of environmental health and sanitation and the establishment of uniform requirements have been the primary aim in the preparation of this material. It is recognized that continued scientific progress will require changes in Standards over long periods.

The adoption of these Standards offers health officials an opportunity to present a united front in securing the basic equipment to make safe and clean food service possible as demanded by the

general public. It gives users of such equipment the assurance of meeting health standards and passing inspection. Also, this gives manufacturers the advantage of applying uniform construction methods with confidence that equipment conscientiously built to meet these Standards will be generally acceptable.

Finally, as an aid to all concerned in recognizing approved equipment, the National Sanitation Foundation has established a policy under which the use of its insigne, nSf, will be authorized on equipment of types that meet the standards herein established for Food Service Equipment and Appurtenances.

Permission to use the National Sanitation Foundation Seal of Approval will be granted only after an investigation of the applicant's manufacturing methods and, where deemed necessary, tests of equipment show compliance with the Standard. Continuance of the agreement is dependent upon continued evidence of compliance with the Standard upon periodic re-examination of equipment in factory and field.

Our sincere appreciation is extended to all members of the Committees herein listed who willingly devote their time to the development of this and other Standards. Special credit and thanks are due the members of the Joint Committee on Food Equipment Standards for the long hours spent in review, discussion and correspondence as well as to the Industry Advisory Committee for its untiring efforts through the years in which this work has been in progress.

Henry F. Vaughan, Dr.P.H., President
The National Sanitation Foundation

INTRODUCTION

To laymen, the term FOOD SERVICE EQUIPMENT is a high sounding name which is not too well understood. Its use invariably results in the query "What is it?" Public health officials and sanitarians know that food service equipment refers to machinery, appliances, equipment or supplies which are used in the storing, preparation, or serving of food in commercial establishments, as differentiated from domestic use.

In the broad sense it includes complete kitchen installations, as well as the component items such as chinaware, glassware, kitchen utensils, silverware and service items. From this, one can appreciate that the line is extensive and, of necessity, first efforts in sanitation must be limited. This publication, therefore, relates only to tables of all kinds, counters, sinks, drainboards, bins, shelves, drawers, hoods and similar kitchen appurtenances. It does not include baking, roasting, toasting, broiling and frying equipment; food preparation machinery such as slicers, choppers, cutters, mixers and grinders; steam cooking equipment and peelers; dishwashing machines; or refrigerators and refrigerating equipment. Many of the above items or types of equipment are at the time of this Standard No. 2 revision, covered by other NSF Standards.

Any history of the industry must be quite general. Methods of cooking, preparing and serving food go back many years to the old taverns and inns where famous hosts, chefs and epicures employed their own peculiar methods of preparing food for which equipment and utensils gradually were developed. In those days kitchen equipment consisted principally of wood or coal ranges, wooden work tables, copper or cast iron kettles, plain iron sinks and storage boxes. The fuel and materials used were primitive, and according to current standards the workmanship was crude. All of this has changed by degrees through the years, resulting in today's extensive line of highly specialized, shop built, more smoothly functioning equipment and the use of corrosion resisting materials to assure longer life and ease of cleaning.

The industry in the broad field comprises a wide range of merchants, some of whom manufacture special items of kitchen equipment and carry a complete line of supplies; others handle supplies or equipment only and some specialize on certain products. All parts of the country have ample representation. Recognizing the importance of sanitation features in food equipment a few manufacturers, many years before the original development of NSF Standards, were spending considerable time and effort to assure the proper specifications for

kitchen equipment. When efforts were undertaken to develop NSF Food Equipment Standards these manufacturers were the leaders in the food equipment industry to undertake this effort.

This work was undertaken by the Food Service Equipment Industry, Inc., a trade association organized in 1933, and having a membership of about 225, which includes the leading firms in this field. The Association has striven for better conditions in the industry and has carried on a program that has brought about many improvements. Important among these was the decision to participate in the National Sanitation Foundation Clinic, in June, 1948. Since then members have been meeting and revising a basic draft of specifications covering the sanitary construction of equipment with the advice of other manufacturers and counsel. The final draft was completed early in May 1951, since which time it has been submitted to public health officials and sanitarians for final approval.

The industry as represented by the F.S.E.I expresses willingness to cooperate with public health officials and sanitarians. It is well to mention that the suggested standards were designed with an eye to the future. In adopting them, due consideration should be given to avoiding undue hardship to merchants and others using this equipment.

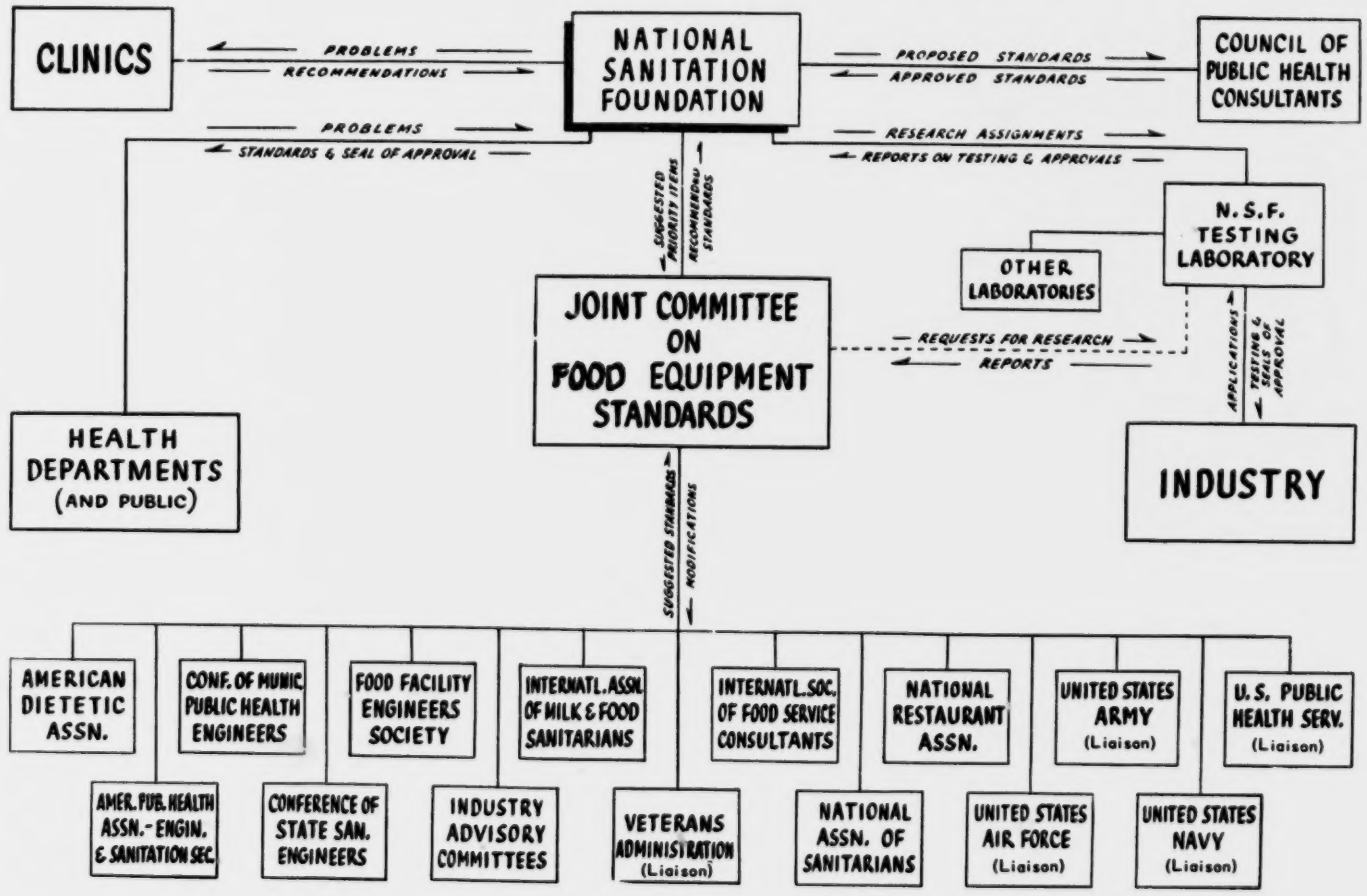
At the request of the F.S.E.I. Committee and the Food Equipment Manufacturers Association the revision of Standard No. 2 was undertaken in 1960. The original No. 2 Committee of F.S.E.I. members was enlarged to include representation from FEMA to undertake the redrafting of the Standard. This revised No. 2 Standard, covering Food Service Equipment and Appurtenances, is a demonstration of the unified interests of industry and user groups working in cooperation with public health officials toward improvement of public health through the establishment of uniform sanitation specifications for Food Service Equipment.

It is hoped that these standards will result in better equipment and that the user will be compensated with equipment that can be cleaned easier, have longer life and improve public health and sanitation standards.

CONTENTS

	Page
Committees Participating	3
Council of Public Health Consultants	5
Industry Task Committee	9
Section 1—General	10
Section 2—Definitions	11
Section 3—Materials	13
Section 4—Design and Construction	15
Food Zone	15-18
Splash and Non-Food Contact Surfaces	18
General Construction	19-33
Items of Special Sanitary Significance	33-47
Section 5—Wheeled Food Service Equipment	48
Section 6—Conveyors	48
Recommendations for Installation	49-51
Suggestions Concerning Regulations	52

ORGANIZATION CHART
NATIONAL SANITATION FOUNDATION PROGRAM
FOR STANDARDIZING, TESTING AND APPROVING EQUIPMENT



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NATIONAL SANITATION FOUNDATION

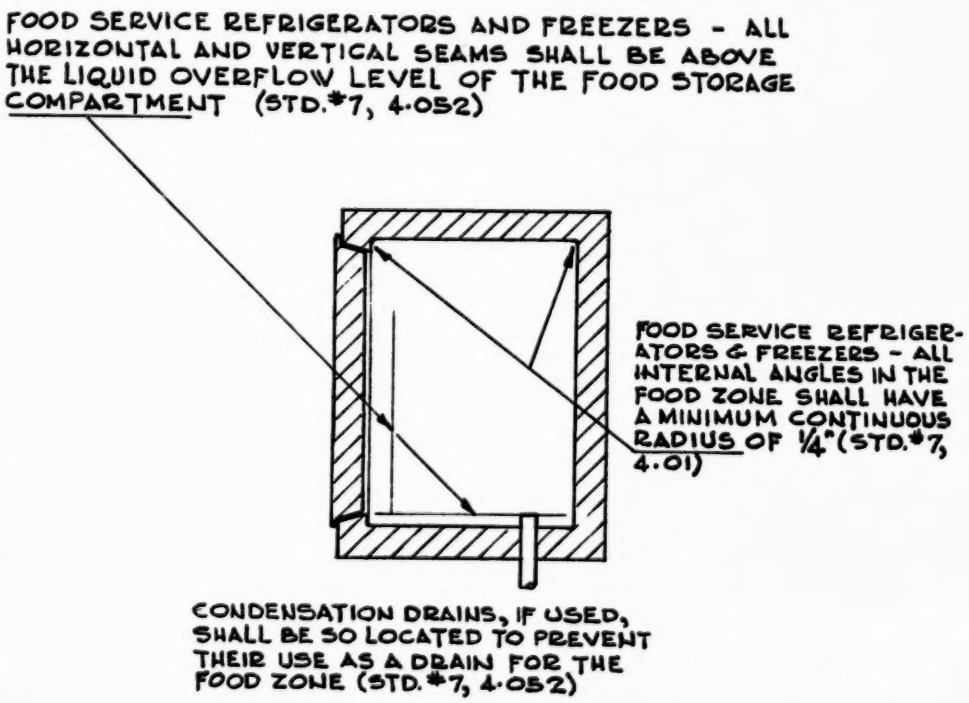
Standard No. 2

Relating to

FOOD SERVICE EQUIPMENT AND APPURTENANCES

SECTION 1. GENERAL

1.00 COVERAGE: This Standard covers equipment commonly known to the trade as "fabricated food service equipment." It includes kitchen, bakery, pantry and cafeteria units and other food handling and processing equipment, such as tables of all kinds and their component parts, counters, shelves, sinks and hoods. It includes the basic principles of design, construction, and performance as is necessary to achieve easy cleanability, food protection, and freedom from harborages which are applicable to equipment commonly known as fabricated food service equipment and their component parts or appurtenances. This Standard shall serve as a guide and in no way shall restrict new design, provided the design does not fall below the minimum specifications of this Standard.


FOOD SERVICE REFRIGERATORS AND FREEZERS - ALL HORIZONTAL AND VERTICAL SEAMS SHALL BE ABOVE THE LIQUID OVERFLOW LEVEL OF THE FOOD STORAGE COMPARTMENT (STD.#7, 4.052)
FOOD SERVICE REFRIGERATORS & FREEZERS - ALL INTERNAL ANGLES IN THE FOOD ZONE SHALL HAVE A MINIMUM CONTINUOUS RADIUS OF 1/4" (STD.#7, 4.01)
CONDENSATION DRAINS, IF USED, SHALL BE SO LOCATED TO PREVENT THEIR USE AS A DRAIN FOR THE FOOD ZONE (STD.#7, 4.052)

1.01—Compliance With Other Standards

1.01 MINIMUM REQUIREMENTS: These are minimum requirements and variations may be made when they tend to make units more resistant to wear, corrosion, or more easily cleanable. Units which have component parts which are covered under existing NSF Standards or Criteria shall comply with the applicable requirements thereof.

1.02 ALTERNATE MATERIALS: Whenever specific materials are mentioned, it is understood that the use of materials proven to be equally satisfactory from the standpoint of sanitation and protection of product is acceptable.

1.03 STANDARD REVIEW: A complete review of the Standard shall be conducted at intervals of not more than three years to determine what changes, deletions, or additions, if any, are necessary to maintain current and effective requirements consistent with new technology and progress. These reviews shall be conducted by appropriate representatives from the industry, public health, and user groups. Final adoption of revision shall be in accordance with the procedures established by the National Sanitation Foundation Joint Committee on Food Equipment Standards.

SECTION 2. DEFINITIONS

2.00 ACCESSIBLE: Accessible shall mean readily exposed for proper and thorough cleaning and inspection with the use of only simple tools such as a screw driver, pliers, or open-end wrench.

2.01 READILY ACCESSIBLE: Readily accessible shall mean exposed without the use of tools for proper and thorough cleaning and visual inspection.

2.02 CLEANING: The term cleaning shall mean the physical removal of residue of dirt, dust, foreign material, or other soiling ingredients or materials.

2.03 READILY (OR EASILY) CLEANABLE: Readily (or easily) cleanable shall mean readily accessible and of such material, finish, and so fabricated that soil may be effectively removed by normal cleaning methods.

2.04 CLOSED: Spaces required to be closed shall have no openings large enough for the entrance of insects or rodents. An opening of 1/32 inch or less shall be considered closed.

2.05 CORROSION-RESISTANT: Corrosion-resistant materials are those which maintain their original surface characteristics under prolonged influence of the foods to be contacted, the normal use of cleaning compounds and bactericidal solutions, and other conditions of the use environment.

2.06 CONVEYORS: A mechanism for moving items from one location to another.

2.07 WHEELED FOOD SERVICE EQUIPMENT: Wheeled food service equipment is that which is placed on casters or wheels and can be easily moved for auxiliary food processing or service, but shall not include licensed motor vehicles.

2.08 REMOVABLE: Removable shall mean capable of being taken from the main unit with the use of only simple tools such as, but not limited to, a screwdriver, pliers, or wrench.

2.09 READILY REMOVABLE (EASILY): Readily removable (easily), shall mean capable of being taken away from the main unit without the use of tools.

2.10 SANITIZING: Sanitizing shall mean effective bactericidal treatment of clean surfaces of equipment and utensils by a process which has been proven effective.

2.11 SEALED: Spaces required to be sealed shall have no openings that will permit the entry of insects, rodents, dirt, or moisture seepage.

2.12 SMOOTH: The word "smooth" is used to define a surface free of pits and inclusions and having a cleanability equal to the following: Product Zone: Number 3 (100 grit) finish on Stainless Steel. Splash and Non-Product Zone: Commercial grade hot rolled steel free of visible scale.

2.13 TOXIC: The word toxic shall refer to the adverse physiological effect to man.

2.14 NON-FOOD ZONE: The terms non-food zone or non-food contact surface shall mean all exposed surfaces not in the food or splash zones.

2.15 FOOD ZONE: The term food zone or food contact surfaces includes those surfaces of equipment with which the food or beverage normally comes in contact, and those surfaces with which the food or beverage is likely, in normal operation, to come into contact and drain back onto surfaces normally in contact with the food or into the food.

2.16 SPLASH ZONE: The terms splash zone or splash contact surfaces shall mean those surfaces, other than food contact surfaces, which are subject to routine splash, spillage and contamination during normal use.

2.17 DISPLAY CASE: Any enclosed case used for the purpose of displaying and/or dispensing unpackaged foods is considered to be a display case.

2.18 URN STAND: The term urn stand shall mean a stand, fixed, portable, or wheeled, intended to support a coffee, tea, or water urn. The term shall not include tables or stands on which small self-contained coffee brewers are mounted.

2.19 FOOD: Shall mean any raw, cooked, or processed edible substance, beverage, or ingredient used or intended for use or for sale in whole or in part for human consumption.

SECTION 3. MATERIALS

3.00 GENERAL: Only such materials shall be used in the construction of food service equipment and/or appurtenances as will withstand normal wear, penetration of vermin, the corrosive action of foods or beverages, cleaning compounds, and such other elements as may be found in the use environments and will not impart an odor, color, or taste to the food.

3.01 FOOD CONTACT SURFACES: Surface materials in the food zone shall be smooth, corrosion-resistant, non-toxic, stable, and non-absorbent under use conditions and shall not impart odor, color, or taste nor contribute to the adulteration of the food.* Exposed surfaces in the food zone shall be finished so as to be easily cleanable.

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* The requirements of the Federal Food, Cosmetics and Drug Act, as amended shall be used as a general guide.

3.02 SPLASH CONTACT SURFACES: Splash contact surfaces shall be smooth and of an easily cleanable and corrosion-resistant material, or shall be rendered corrosion-resistant with a material which is non-cracking, non-chipping, and non-spalling. Paint shall not be used except as provided in Item 4.13.

3.03 NON-FOOD CONTACT SURFACES. Non-food contact surfaces shall be smooth and of corrosion-resistant material or shall be rendered corrosion-resistant or painted. Parts of the equipment directly over and adjacent to the food zone and parts having both food contact and non-food contact surfaces shall have non-food contact surfaces rendered corrosion-resistant and if coated, the coating shall be of a non-cracking, non-chipping, and non-spalling type.

3.04 SOLDER: Solder in the food zone shall conform to the following:

3.041 SOFT SOLDER: Soft solder shall be of such formulation as to be non-toxic under use conditions, shall contain at least 50% tin, shall contain no more lead than is necessary under good solder manufacturing practice; and shall, consistent with good industrial practice in the refining of its constituent elements, be free of cadmium, antimony, bismuth, and other toxic materials. Other solders may be accepted under the provisions of Item 1.02 if they are demonstrated to be non-toxic under use conditions.

3.042 HARD SOLDER: Hard solder (silver solder) shall be of such formulation as to be non-toxic under use conditions, shall be corrosion-resistant; and shall, consistent with good industrial practice in the refining of its constituent elements, be free of cadmium, antimony, bismuth, and other toxic materials.

3.05 PAINT: Lead base paint shall not be used.

3.06 PLASTIC RESIN SYSTEMS: Plastic resin systems may be used provided they meet the applicable requirements of 3.00, 3.01, 3.02, and 3.03.

3.07 WELDING: When welded seams are used, the weld area and deposited weld material shall meet the applicable corrosion-resistant requirements.

3.08 GASKETS AND PACKINGS: Gaskets and packings shall be made of materials such as resilient rubber, rubber-like materials, or plastic. Such materials shall be non-toxic, stable, odor free, non-absorbent, and be unaffected by exposure to foods and cleaning compounds.

3.09 BREAKER STRIPS: Exposed breaker strips shall be made of material which is non-toxic, odor free, non-absorbent, and stable. They shall have smooth, easily cleanable surfaces with all sharp or rough edges removed.

3.10 SOUND DAMPING: Sound damping materials shall, when applied, comply with the requirements of the zone in which used. The material shall not spall, flake, or blister. Non-hardening types are not acceptable.

3.11 SCRAPPING BLOCKS: Scrapping blocks in soiled dish tables shall be of resilient, grease-resistant material.

3.12 CUTTING BOARDS: Cutting boards shall be of hard (sugar) maple or pecan. Such boards shall be kiln dried to 6-8% moisture content by weight after conditioning to remove stresses, case hardening and other drying defects, and shall have a weight per cubic foot of not less than 43.4 pounds. Other materials may be used provided they meet the requirements of Item 1.02 and the applicable requirements of 3.00 and 3.01.

3.13 DRAWERS: Drawers and containers intended only for utensil storage in fabricated food service equipment shall meet the material requirements of Item 3.02.* Drawers having product contact surfaces shall meet the requirements of Item 3.01.

SECTION 4. DESIGN AND CONSTRUCTION

FOOD ZONE

4.00 GENERAL DESIGN AND CONSTRUCTION: Food service equipment and appurtenances shall be designed and constructed in such a manner as to exclude such vermin, dust, dirt, splash, or spillage from the food zone as may be encountered under the intended use conditions and be easily cleaned, maintained, and serviced.

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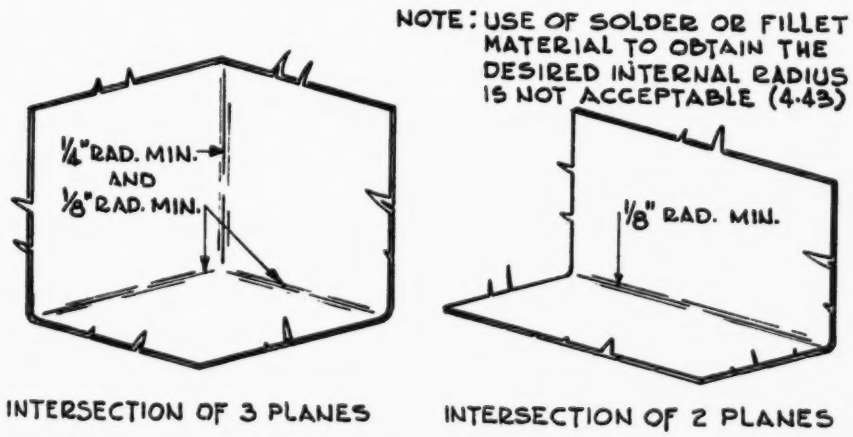
* Material requirements for Splash Zone permit the use of galvanized surfaces.

4.01 CLEANABILITY: All food contact surfaces shall be readily accessible and easily cleanable either in an assembled position or when removed. Demountable parts shall be readily removable.

4.011 In equipment of such design that food contact surfaces are not readily removable and in-place cleaning is intended, tubing, pipe, fittings, and valves shall be so arranged that cleaning and bactericidal solutions can be circulated under pressure throughout the fixed system. Such solutions shall contact all interior surfaces. The system shall be self-draining or otherwise completely evacuated, and the manufacturers' recommended cleaning procedures shall result in thorough cleaning of the equipment. Food service equipment and appurtenances designed for cleaning-in-place shall have a section of the line cleaned-in-place accessible for inspectional purposes or other inspectional method provided.

4.02 FUNCTION: Food service equipment and appurtenances shall be designed and constructed so that ingredient(s) or food(s) can be added and the finished food dispensed, removed, or served in a sanitary manner.


NOTE: USE OF SOLDER OR FILLET MATERIAL TO OBTAIN THE DESIRED INTERNAL RADIUS IS NOT ACCEPTABLE (4.43)
1/4" RAD. MIN.
AND
1/8" RAD. MIN.
1/8" RAD. MIN.
INTERSECTION OF 3 PLANES
INTERSECTION OF 2 PLANES

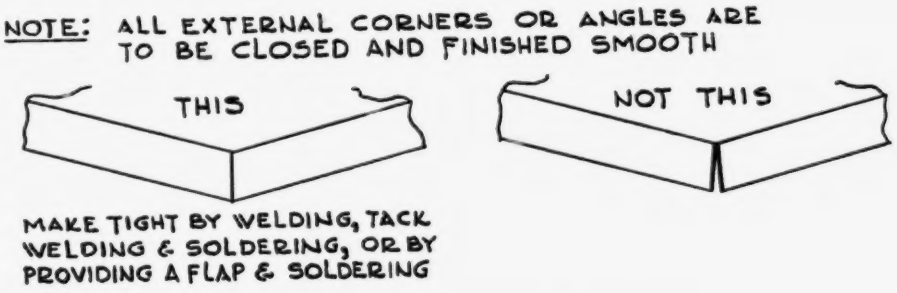
4.03—Corners or Angles—Internal

4.03 CORNERS OR ANGLES—INTERNAL: All internal angles or corners (of two or more planes at 110 degrees or less) shall have rounded angles wherever it will make cleaning easier. All internal corners where exposed to unpackaged foods shall be eliminated to conform with the following:

4.031 An internal angle formed by the intersection of two planes shall have a minimum continuous and smooth radius of 1/8 inch.

4.032 An internal corner formed by the intersection of three planes (at 110 degrees or less) shall have a minimum continuous and smooth radius of 1/4 inch for vertical or horizontal intersection, the alternate intersections being constructed with a minimum continuous and smooth radius of 1/8 inch.

4.04 INTERNAL CORNERS OR ANGLES—OTHER THAN METAL: For materials other than metal, the radii specified in 4.031 and 4.032 shall be effected by use of parent material or by a material which has been proven to be so bonded and otherwise equal to or better than the parent material.


NOTE: ALL EXTERNAL CORNERS OR ANGLES ARE TO BE CLOSED AND FINISHED SMOOTH
THIS
NOT THIS
MAKE TIGHT BY WELDING, TACK WELDING & SOLDERING, OR BY PROVIDING A FLAP & SOLDERING

4.05—Corners or Angles—External

4.05 CORNERS OR ANGLES—EXTERNAL: All exposed external angles and corners are to be sealed and smooth.

4.06 SOLDERING: Wherever solder is used, it shall be securely bonded to the metal so that it will not crack or chip off and the surface shall be made smooth. Flux and catalytic material shall be neutralized and removed.

4.061 The use of soft solder shall be limited to joining metal or sealing seams between abutting metal surfaces.

4.062 The use of hard solder shall be permitted for filling structurally sound joints and seams in the liners of refrigerated equipment.

4.07 WELDING: Welded areas included in surfaces requiring routine cleaning, as in sinks and in surfaces in contact with food, shall be smooth.

4.08 JOINTS AND SEAMS: All joints and seams in the food zone shall be sealed and shall be smooth as the surfaces being joined. Wherever feasible and practical, equipment parts in the food zone shall be stamped, extruded, formed, or cast in one piece.

4.09 FASTENING METHODS: Exposed screws, projecting screws, projecting studs, or rivet-heads shall be eliminated from food contact surfaces provided, however, that the use of low profile type (brazier head) rivets properly affixed and without open joints and seams may be used to attach handles on pots and pans.

SPLASH AND NON-FOOD CONTACT SURFACES

4.10 GENERAL DESIGN AND CONSTRUCTION: Food service equipment and appurtenances shall be designed and constructed in such a manner as to minimize the retention of moisture and dust, the shelter of vermin and dirt, and to facilitate inspection, servicing, maintenance, and cleaning.

4.11 JOINTS AND SEAMS: In the splash zone, all joints and seams shall be sealed and made smooth. Joints shall be made in such a manner as to eliminate dirt-catching horizontal ledges. All joints and seams in the non-food zone shall, where exposed to seepage and condensation, be sealed and made smooth.

4.12 FASTENING METHODS: In the non-food zone, exposed screws, projecting screws, studs, and rivet-heads shall be used only when it has been demonstrated that other fastening methods are impractical, and exposed screws, projecting screws, and studs shall be eliminated from the Splash Contact Surfaces. Exposed rivets, screw or bolt heads in the Splash Zone shall be of low profile type such as brazier or modified brazier rivets or pan and oval heads respectively.

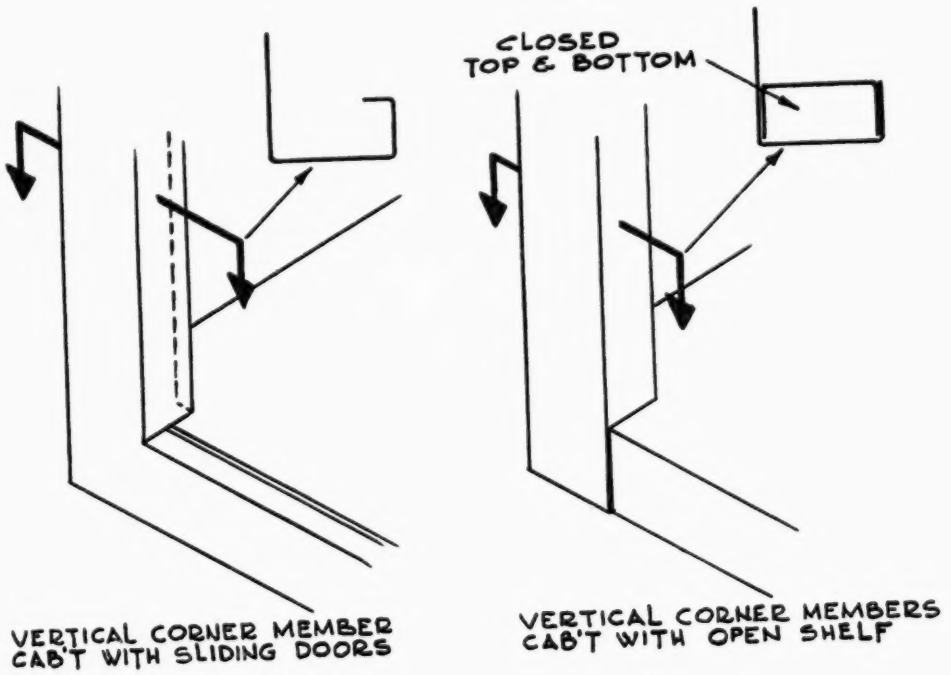
4.121 INTERIOR FASTENINGS: In areas subject to cleaning, interior fastenings shall be accomplished in such a manner as to minimize projections, ledges, and recesses.

4.13 PAINT: Paint is a satisfactory finish for normally dry surfaces.

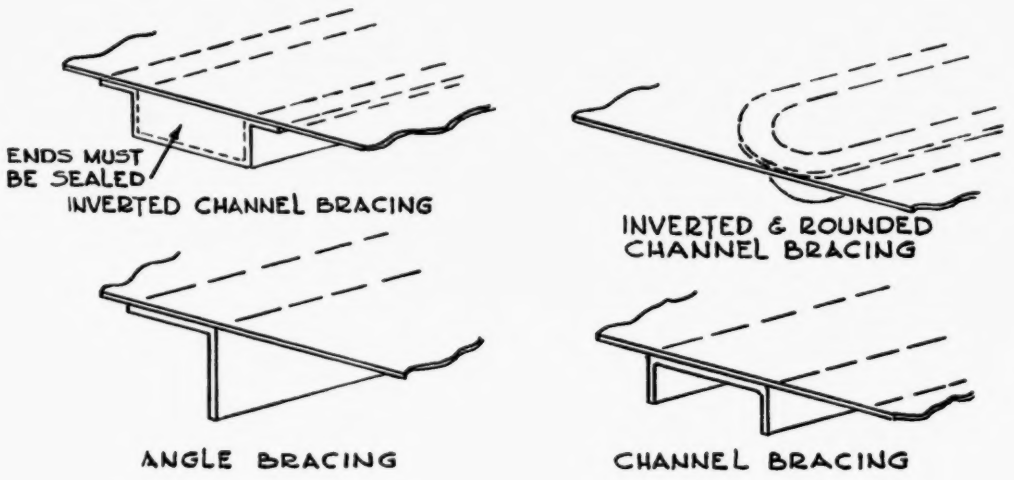
4.14 SOLDERING: Whenever solder is used, it shall be securely bonded to the metal so that it will not crack or chip off, and the surface shall be smoothed. Flux and catalytic material shall be neutralized and removed.

GENERAL

4.15 REINFORCING AND FRAMING: Reinforcing and framing members not totally enclosed, or within walls, are to be placed in such manner as to be easy to clean. All framing and reinforcing members shall be so placed as to eliminate harborage for vermin. The ends of all hollow sections of reinforcing and framing members shall be sealed. Horizontal angle reinforcing and gussets shall not be placed where food or garbage may accumulate thereon. Where angles are used horizontally they shall have one leg turned down wherever the nature of the equipment permits, or shall be formed integral with the sides as for use with removable shelves or for drawer slides. All vertical channel sections shall be either completely closed or open to the floor.



4.15—Body Construction



4.15—Reinforcing & Framing Members Under Tops & Shelving

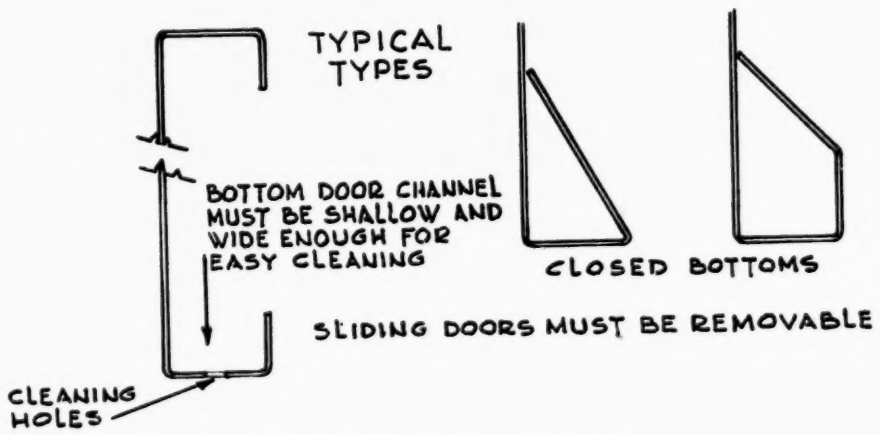
4.16 FIXED PANELS: Where fixed panels are applied to the outside or inside or set into angle or other reinforced body or counter frames, the method of fastening shall be such as to minimize projections and openings.

4.161 REMOVABLE PANELS: Where necessary for inspection and maintenance, easily removable panels shall be provided. They shall be of adequate size to serve the purpose intended, but otherwise confined in size and so constructed that one person can handle them. Removable panels shall conform with applicable construction requirements for the zone in which they are to be used.

4.17 LININGS: Bottoms or gutters of linings in fixtures requiring drainage are to be self-draining.

4.18 FINISHING: Painted finishes may be used in the non-food zone where they improve sanitation by preventing oxidation or condensation. Non-wearing surfaces subject to corrosion that require cleaning shall be rendered corrosion resistant by plating or painting conforming to the applicable requirements of Items 3.00, 3.02 and 3.03.

4.19 DOORS AND COVERS: Metal doors to enclose openings and provide access to interior compartments shall be fabricated in two basic types of construction, that is, by means of single panel or double panel walls, with or without intermediate insulation. Hinges shall be kept to a minimum in the food and splash zones. Hinges required in the food or splash zones shall be easy to clean and of simple take-apart design and construction. Piano-type or fixed pin hinges are not permissible in the food or splash zone. All sliding doors are to be readily removable. Doors other than metal are to be in accordance with MATERIALS specifications and of flush panel type.


TYPICAL TYPES
BOTTOM DOOR CHANNEL MUST BE SHALLOW AND WIDE ENOUGH FOR EASY CLEANING
CLOSED BOTTOMS
SLIDING DOORS MUST BE REMOVABLE
CLEANING HOLES

4.191—Single Panel Doors

4.191 DOORS—WITHOUT INSULATION: Single panel doors shall be built in such a manner as to minimize the collection of food particles and other foreign matter and preferably without channel sections at the bottom; if channel sections are so used, they shall be constructed so as to be easily cleanable. (See 4.15 REINFORCING AND FRAMING) Double walled doors consisting of face and interior sheets shall be closed around four sides and at corners.

4.192—Insulated Doors

4.192 DOORS—INSULATED: When gaskets are used on insulated doors they shall be readily cleanable and easily replaceable. Gaskets shall be constructed without grooves or projections.

ALL DOORS SHALL BE REMOVABLE.
GLASS SHALL BE SET TIGHT AGAINST FRAME.
CASES DISPLAYING BAKED GOODS AND SUBECT TO HEAT FROM LIGHTS ARE TO BE FITTED WITH VENTS.
IN REFRIGERATED CASES ALL INTERMEDIATE SHELVES ARE TO BE OPEN TYPE AND REMOVABLE.
REFRIGERATED CASES DESIGNED FOR STORAGE AND DISPLAY OF PASTRIES & PERISHABLES SHALL HAVE A MAINTAINED TEMPERATURE OF NOT MORE THAN 45° F.

4.193—Glass Doors

4.193 GLASS DOORS: Exposed edges of glass doors shall be protected against chipping by protective channels or suitable stripping; or non-friable glass with edges ground smooth shall be used. If protective channels are used, they shall be tight fitting.

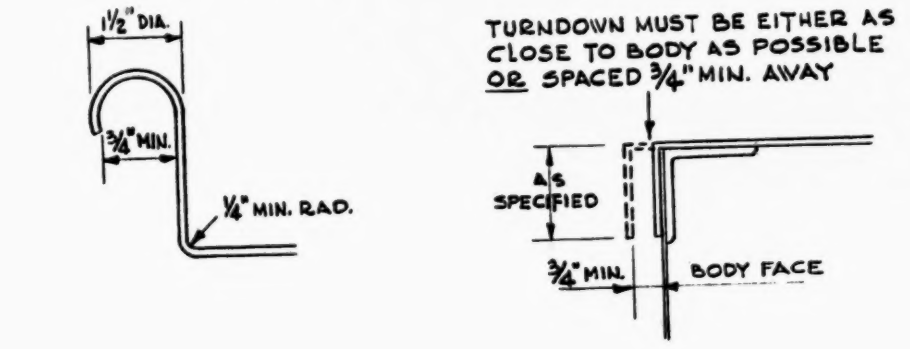
4.194 DOOR TRACKS AND GUIDES: All bottom tracks and guides for doors shall be built in such manner as to minimize the collection of food particles and other foreign matter and shall be so constructed as to be easily cleanable. Deep type bottom channel tracks shall not be used.

The following are examples of design features to further facilitate cleaning and maintenance:

1. Providing clear open slots continuous or at interval.
2. Providing clean-out holes at ends of track or guide bottom.
3. Stopping tracks or guides ½ inch minimum short of opening framing at each end.
4. Forming tracks or guides integral with interior bottoms and without square corners.

5. Providing overhead door suspensions with lower guides which are constructed integral with the bottoms.

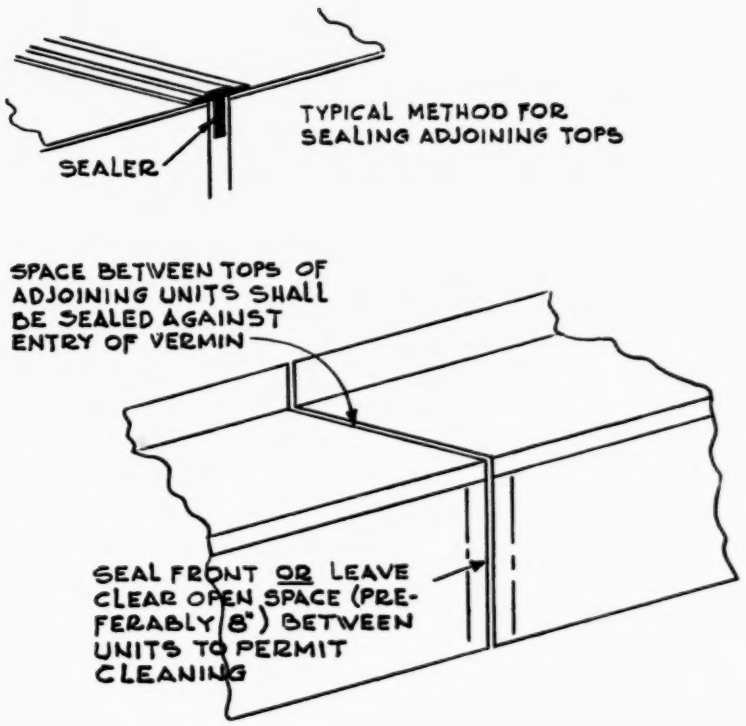
6. Providing readily removable T strips in channel type bottom tracks.



4.20—Exposed Edges & Nosings

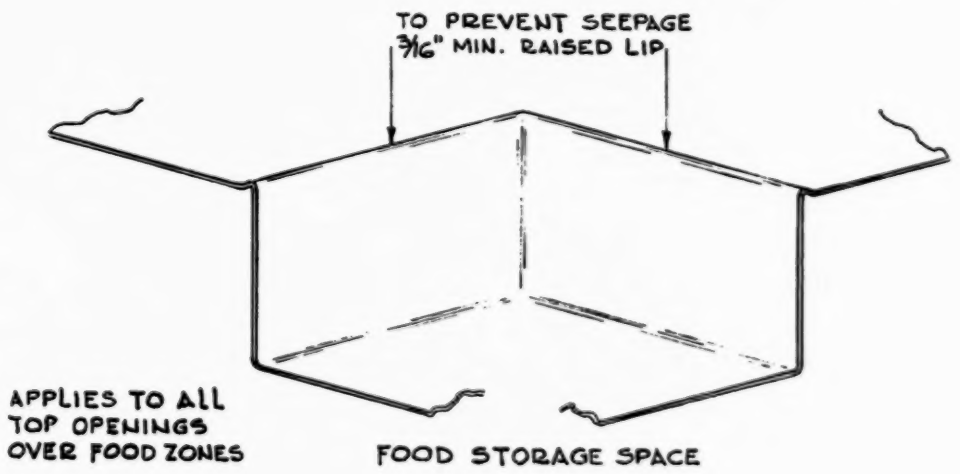
4.20 EXPOSED EDGES AND NOSINGS: All exposed edges and nosings on horizontal surfaces shall be integral with tops regardless of profiles, and where exposed to fingers and cleaning, they shall be made smooth. Nosings shall be open ¾ inch or completely closed against the body of the unit on all sides to prevent the harborage of insects. Where the edges of tops or shelves are flanged down and turned back, the return under-flange shall be less than ½ inch and be angled down and the space between the top and the flange shall be not less than ¾ inch, and the space between the sheared edge and the frame angle or cabinet body shall not be less than ¾ inch to provide access for cleaning.

4.21 FIELD JOINTS: Where field joints are required, they shall be made sanitary by use of trim strips, welded, soldered, properly designed draw fastening or other methods acceptable under the provisions of Items 1.01 and 1.02. Such joints shall be smooth and sufficiently strong to insure against breaking open from normally anticipated use.

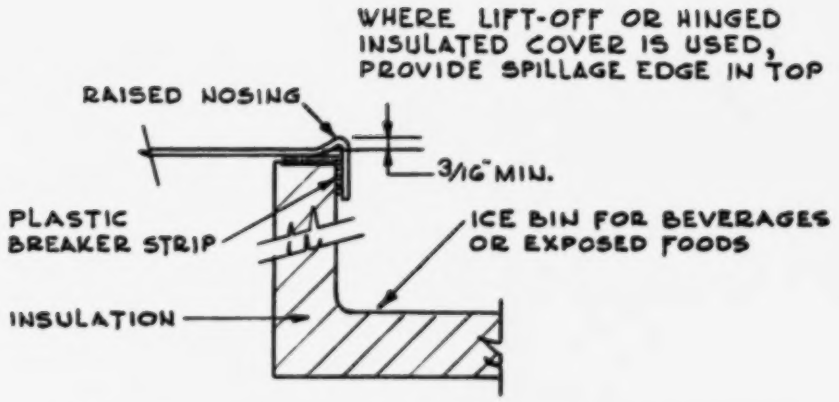

TYPICAL METHOD FOR SEALING ADJOINING TOPS
SEALER
SPACE BETWEEN TOPS OF ADJOINING UNITS SHALL BE SEALED AGAINST ENTRY OF VERMIN
SEAL FRONT OR LEAVE CLEAR OPEN SPACE (PREFERABLY 8") BETWEEN UNITS TO PERMIT CLEANING

4.21—Trimming & Sealing Openings in Counter Tops & Bodies

4.22 OPENINGS AND RIMS—FOOD ZONE: To prevent seepage, all top openings over food zones shall be protected by a raised rim at least 3/16 inch above the level to which liquids may accumulate.

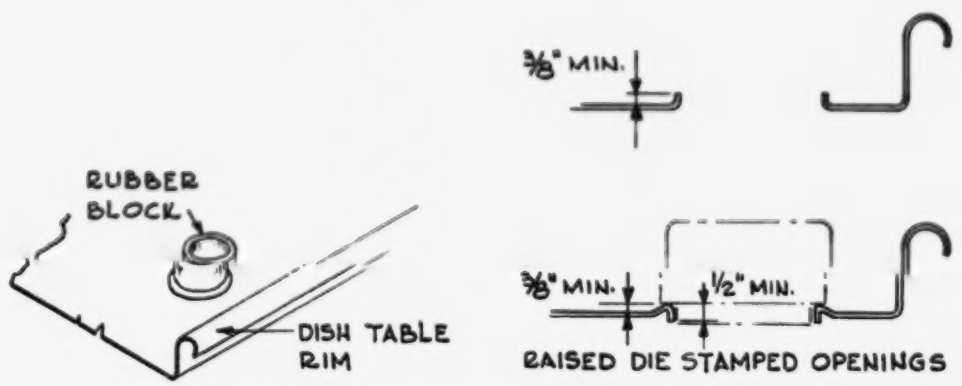


4.22—Openings & Rims—Food Zone


WHERE LIFT-OFF OR HINGED INSULATED COVER IS USED, PROVIDE SPILLAGE EDGE IN TOP
RAISED NOSING
3/16" MIN.
PLASTIC BREAKER STRIP
ICE BIN FOR BEVERAGES OR EXPOSED FOODS
INSULATION

4.22—Covers Over Unpackaged Food Compartments or Beverage Ice Bin

4.23 OPENING TO WASTE RECEPTACLE: The dishtable opening to the waste receptacle shall have a water-tight, turned-down edge extending at least 1/2 inch below the bottom of the table top, or a raised rim at least 3/8 inch above the surface of the table may be used, or both may be provided.



4.23—Opening to Waste Receptacle

4.231 OPENING TO FOOD WASTE GRINDER: Food waste grinder cones shall be installed into table tops by continuous welding and made smooth, or in such a manner as to provide an equally effective joint and seam such as by use of gaskets or soldering of structurally sound joints and seams.

4.24 HARDWARE: All hardware shall be smooth, fabricated of material with integral or plated finish, easily cleanable, and secured so it can be replaced easily when broken or worn out. Hardware shall not have open seams, recesses, or unnecessary projections.

4.25 BREAKER STRIPS: Breaker strips shall be installed in such a manner that debris, food particles, water, or seepage do not enter between the breaker strip and the capping and/or the liner.

4.26 LEGS AND FEET: Unless the equipment is designed so that it may be placed on a raised island or sealed to the floor, counter, or table so as to prevent seepage underneath, one or more of the following provisions shall be made for cleaning this area:

4.261 LEGS: The unit shall be mounted on tubular legs of sufficient height to provide a clear space of not less than 6 inches between the lowest horizontal member of the unit and the floor,

OR:

4.262 CASTERS, ROLLERS, GLIDERS: The unit shall be mounted on casters, rollers, or gliders of such material, design, and construction as to permit its being easily moved by one person, and shall be so installed as to be easily cleanable and shall conform to Item 4.10. Casters shall conform to NSF Basic Criteria C-2,

OR:

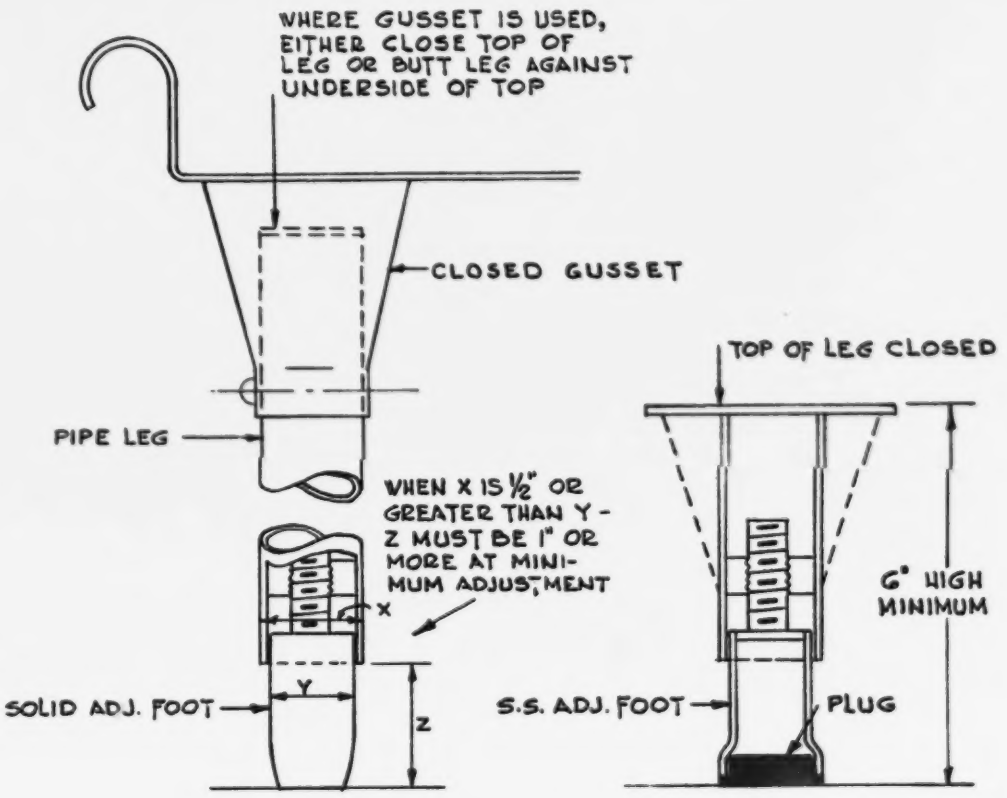
4.263 PORTABLE: The unit shall be small and light enough to permit its being easily moved by one person.

4.264 COUNTER AND TABLE UNITS: Equipment, other than portable, designed to be placed on counters or tables shall conform to the provision of Item 4.262, or be designed to be sealed to the counter, or be mounted on legs of sufficient height to provide a clear space between the lowest horizontal member of the unit and the counter or table top equivalent to 1/6 of the maximum depth of the area to be cleaned. Provided, however, that in no case shall the leg height be less than 4 inches, nor shall the leg height be required to be in excess of 6 inches.

4.265 LEGS AND FEET—DESIGN AND CONSTRUCTION: Legs and feet shall be of metal of sufficient rigidity to provide support with a minimum of cross-bracing and so fastened to the body of the equipment and so shaped at floor contacts as to prevent the accumulation of dirt and the harborage of vermin. When the

outside dimension of the leg is greater than the outside dimension of the foot by ½ inch or more in the same plane, the foot shall, at minimum adjustment, extend 1 inch below the leg. All openings to hollow sections between feet and legs shall be of drip-proof construction with no openings greater than 1/32 inch. All other openings to hollow sections shall be sealed. Legs and feet shall be of simple design, free from embelishments and exposed threads.

Gussets, when used, shall be assembled to the equipment in such a manner as to insure easy cleanability and to eliminate insect harborage. The resultant assembly shall have no recessed areas or spaces.*


WHERE GUSSET IS USED, EITHER CLOSE TOP OF LEG OR BUTT LEG AGAINST UNDERSIDE OF TOP
CLOSED GUSSET
PIPE LEG
WHEN X IS ½" OR GREATER THAN Y - Z MUST BE 1" OR MORE AT MINIMUM ADJUSTMENT
X
Y
Z
SOLID ADJ. FOOT
TOP OF LEG CLOSED
6" HIGH MINIMUM
S.S. ADJ. FOOT
PLUG

4.265—Legs & Feet

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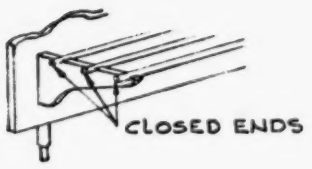
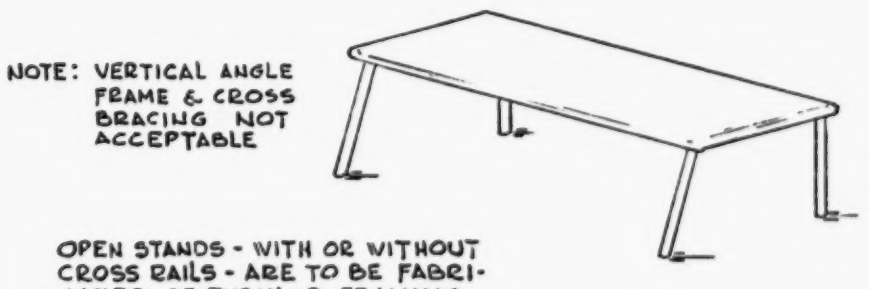
* The intent of this provision is to eliminate the uncleanable areas, generally encountered when open style gussets are used with cylindrical legs.



4.27—Counter Steps & Platform

4.27 COUNTER STEPS AND PLATFORMS: Closed or hollow counter steps or platforms are not acceptable. Foot rests or rails with open space to floor are acceptable.



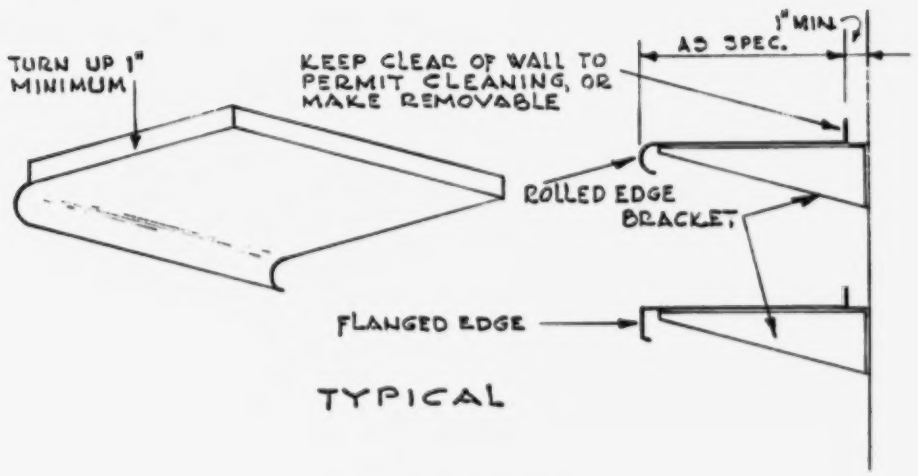
4.28 - 4.282—Open Display Stands

4.28 OPEN DISPLAY STANDS AND BRACKETS: Open display stands and brackets shall be fabricated as follows:

4.281 DISPLAY STANDS: Open display stands with or without cross rails shall be of solid or tubular construction. All tubing used in stands shall be of welded or seamless type. Any assembly method that will insure easily cleanable joints such as, but not limited to, welding and sweating is acceptable.

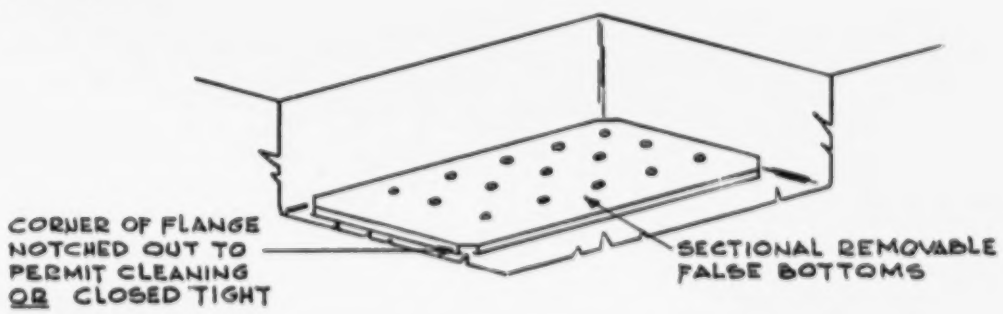
4.282 BRACKETS: All brackets shall be of substantial, smooth, easily cleanable design, fabricated of materials having integral or plated finish.

4.29 COUNTER TRAY SLIDES: Counter tray slides shall be constructed in accordance with the general requirements of these specifications and may be of open tubular or solid construction in accordance with Item 4.28.



4.30—Shelving

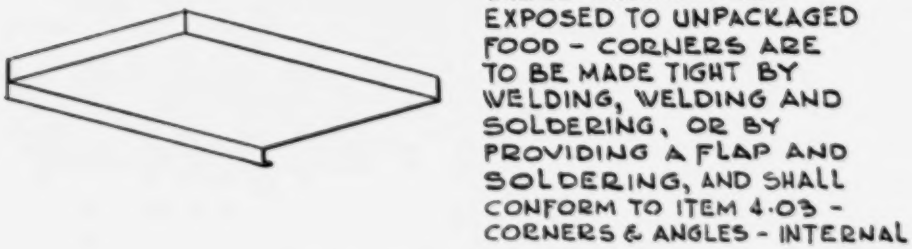
4.30 SHELVING: All shelving, whether fixed or removable, solid or open type, is to be constructed and installed so as to be readily cleanable.



4.301—Peforated False Bottom

4.301 REMOVABLE SHELVES: Removable shelves shall be readily removable and sized to facilitate their handling by one person. Where shelves are used as removable false bottoms, the flanged corners are to be closed or sufficiently notched open to permit cleaning.

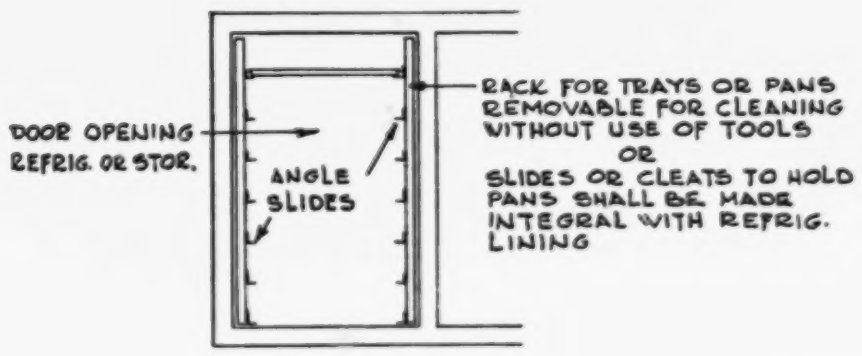
4.302 DIVERTING SHELVES: Shelves intended to prevent seepage or retain spillage and/or splash shall have the back and ends turned up a minimum of 1 inch and corners and seams sealed. Where shelf surfaces are exposed to unpacked foods they shall conform with Item 4.03 CORNERS OR ANGLES — INTERNAL.


WHERE SHELVES ARE INTENDED TO PREVENT SEEPAGE, AS WHEN SET INTO INTERIORS - BACK & ENDS ARE TO TURN UP 1" MIN. - MADE WITH CLOSED CORNERS
WHERE SHELVES ARE EXPOSED TO UNPACKAGED FOOD - CORNERS ARE TO BE MADE TIGHT BY WELDING, WELDING AND SOLDERING, OR BY PROVIDING A FLAP AND SOLDERING, AND SHALL CONFORM TO ITEM 4.03 - CORNERS & ANGLES - INTERNAL

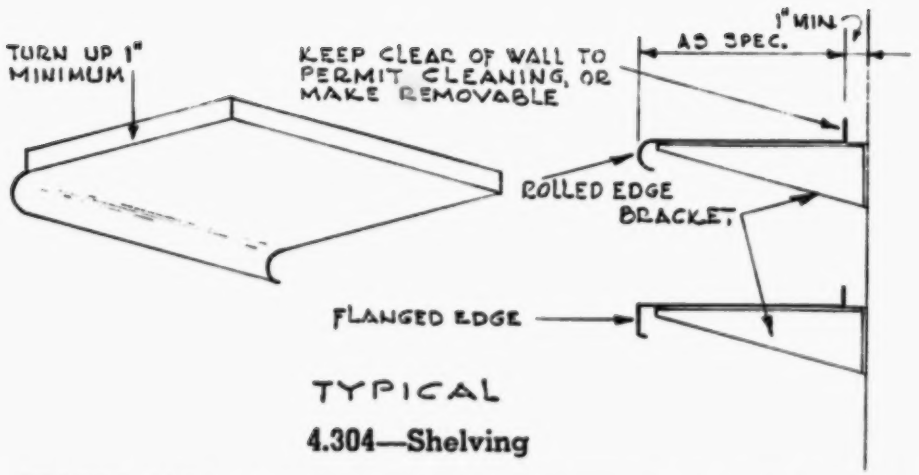
4.302—Diverting Shelves

4.303 INTERIOR FIXED SHELVING: Fixed shelving shall have the back and ends (where against the side panels) turned up a minimum of 1 inch and closed throughout their length, or an open space of 1 inch provided between the shelf and back or side panels, or the resulting joint and seam sealed.

4.304 SHELF BRACKETS AND SLIDES OR CLEATS: When adjustable shelving is provided, the shelf support brackets and pilasters, if used, shall be readily removable and easily cleanable. Where refrigerator cases and other similar items are designed for trays or pans, the slides or cleats to support them are to be made integral with the lining, or shall be easily removable for cleaning.


DOOR OPENING REFRIG. OR STOR.
ANGLE SLIDES
RACK FOR TRAYS OR PANS REMOVABLE FOR CLEANING WITHOUT USE OF TOOLS
OR
SLIDES OR CLEATS TO HOLD PANS SHALL BE MADE INTEGRAL WITH REFRIG. LINING

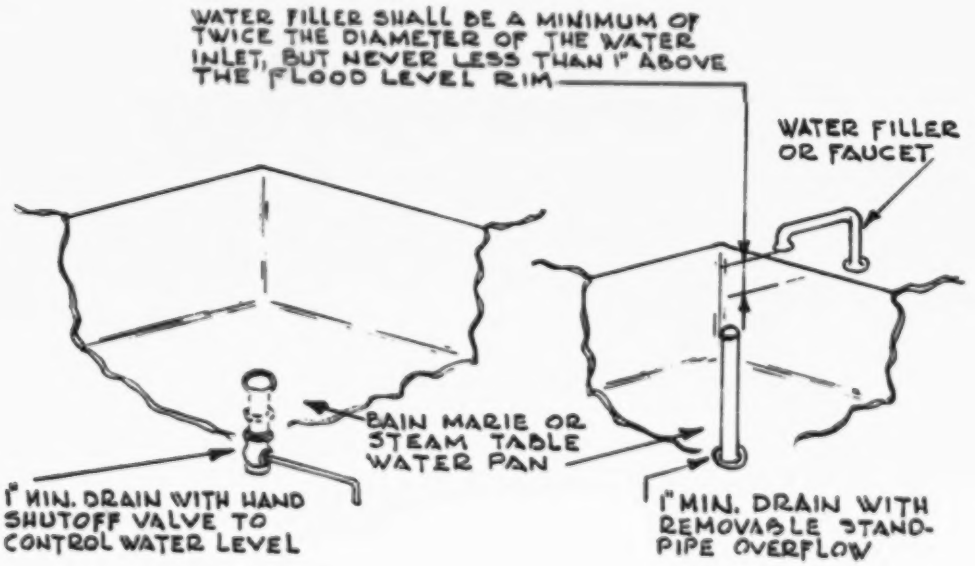
4.304—Slides or Cleats



4.304—Shelving

4.31 WASTE AND WATER FITTINGS: Waste and water fittings attached to the equipment shall comply with the applicable material requirements for the food, splash, and non-food zones.

4.311 DRAINS AND OVERFLOWS — SINKS: The use of sink drains which include a removable strainer, with or without remote drainage control, is acceptable. Overflow gutters or drains between two sink compartments, if provided, shall be approximately 6 inches wide; the top being fitted with a removable strainer plate or basket. Drains shall be a minimum of 1½ inches Iron Pipe Size (I.P.S.) except fountain and underbar sinks which shall be not less than 1 inch, I.P.S.

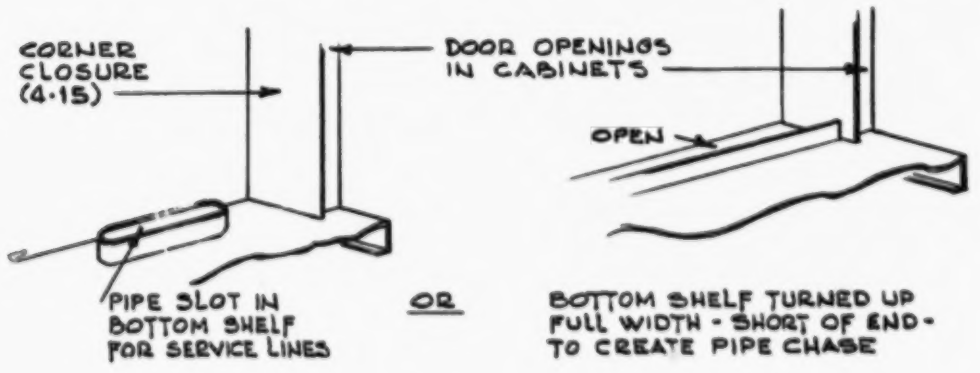

WATER FILLER SHALL BE A MINIMUM OF TWICE THE DIAMETER OF THE WATER INLET, BUT NEVER LESS THAN 1" ABOVE THE FLOOD LEVEL RIM
WATER FILLER OR FAUCET
BAIN MARIE OR STEAM TABLE WATER PAN
1" MIN. DRAIN WITH HAND SHUTOFF VALVE TO CONTROL WATER LEVEL
1" MIN. DRAIN WITH REMOVABLE STAND-PIPE OVERFLOW

4.311 - 4.312—Drains & Overflows

4.312 DRAINS FOR STEAM TABLES AND BAINS-MARIE (WET TYPE): Drains for water pans shall be a minimum of 1 inch I.P.S. with either a valve or an overflow to control the water level.

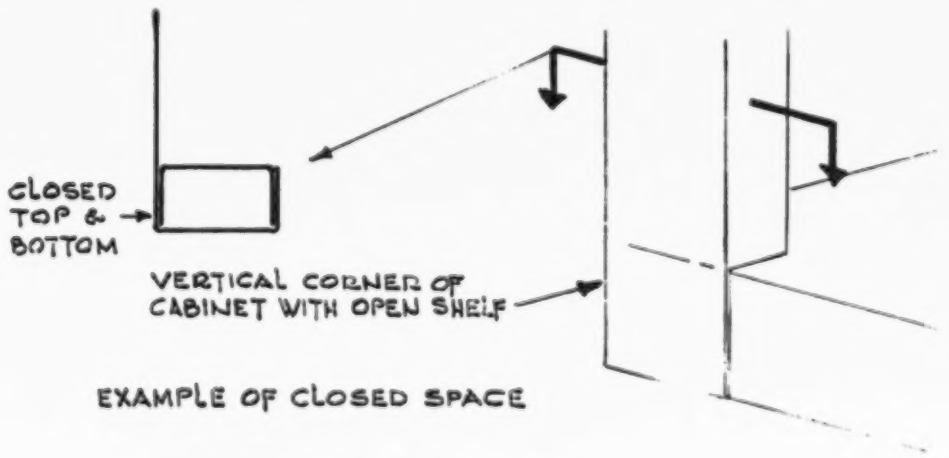
4.32 WATER INLETS: Water inlets and/or connections shall be installed in food service equipment in compliance with the current edition of the ASA National Plumbing Code. (ASA-A40.8—1955)

4.33 PLACEMENT OF DRAINAGE PIPES: All drain connections on equipment shall be so located as to facilitate installation with a minimum of horizontal piping under equipment.


CORNER CLOSURE (4.15)
DOOR OPENINGS IN CABINETS
OPEN
PIPE SLOT IN BOTTOM SHELF FOR SERVICE LINES
OR
BOTTOM SHELF TURNED UP FULL WIDTH - SHORT OF END - TO CREATE PIPE CHASE

4.34—Pipe Chases

4.34 PIPE CHASES: Pipe chases if provided for vertical gas, steam, electrical, and plumbing lines shall be constructed with removable access panels wherever possible. Pipe chases shall be of such design as not to harbor vermin.

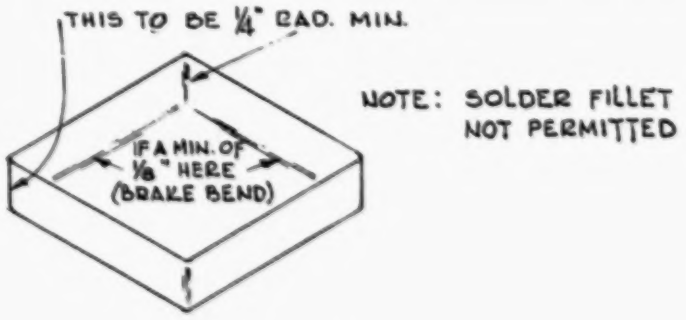


4.341—Enclosed Spaces

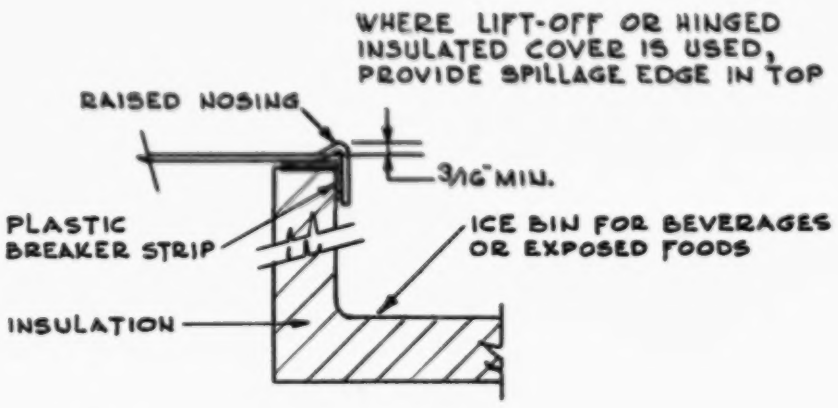
4.341 ENCLOSED SPACES: Enclosed spaces shall be sealed or provided with readily removable access panels. Such removable panels shall be provided wherever condensation is likely to occur within an enclosed space.

ITEMS OF SPECIAL SANITARY SIGNIFICANCE

The following items of special sanitary significance shall comply with the applicable provisions of Items 1.00 through 4.34 and in addition shall conform to the following specific provisions:



4.35—Food Containers


WHERE LIFT-OFF OR HINGED INSULATED COVER IS USED, PROVIDE SPILLAGE EDGE IN TOP
RAISED NOSING
3/16" MIN.
PLASTIC BREAKER STRIP
ICE BIN FOR BEVERAGES OR EXPOSED FOODS
INSULATION

4.35—Covers Over Unpackaged Food Compartments or Beverage Ice Bin

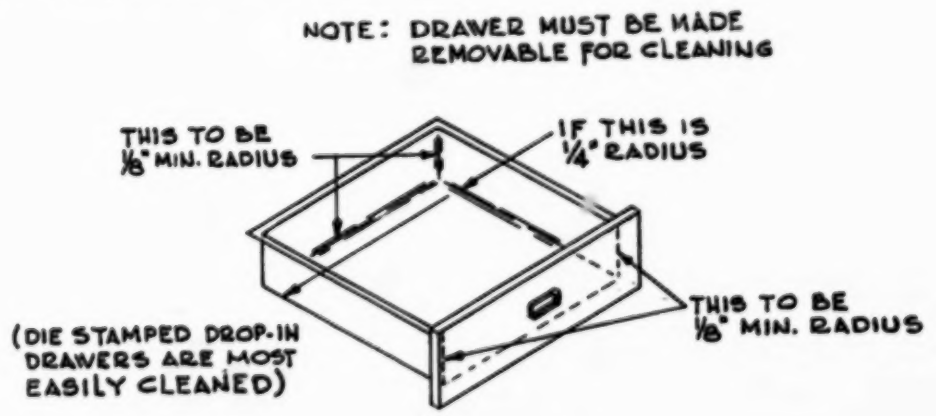
4.35 FOOD AND FLATWARE CONTAINERS AND DRAWERS: Food containers and drawers in the food zone shall be of coved construction (4.031 and 4.032) and shall be smooth and welded or be die-stamped. Fillet material and solder shall not be used to fillet or cove the angles or corners of food containers or food drawers.

4.36 POTS, PANS, AND UTENSILS: Pans, pots, and other utensils shall be constructed to comply with the following specific items:

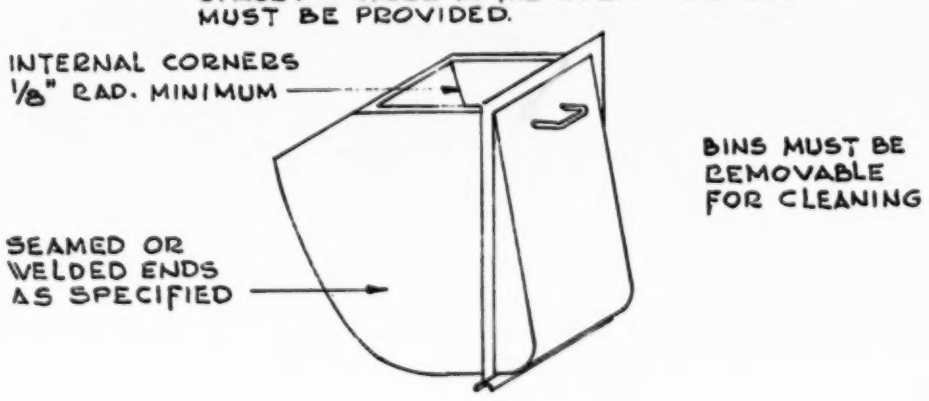
4.361 Rims of pots and pans shall be easily cleaned. Rolled type beads shall be closed and sealed.

4.362 Handles and handle assembly parts shall be attached one to another and to the pot, pan, or utensil in such a manner as to eliminate inaccessible cleaning areas, recesses, and open seams.

4.37 INSETS: All insets or receptacles for unpackaged moist foods and beverages shall be removable, drainable, and easily cleanable. Such containers shall be of open-mouth type, covered, and conform to the requirements of Item 4.36.

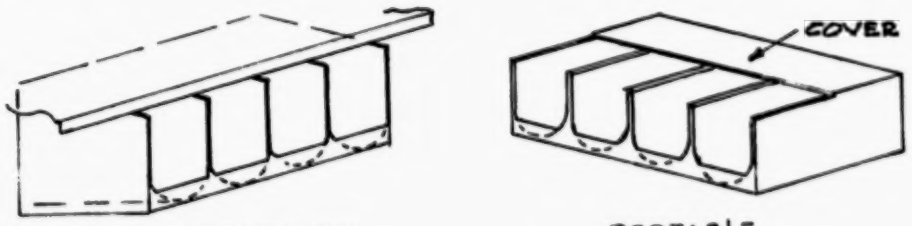

NOTE: DRAWER MUST BE MADE REMOVABLE FOR CLEANING
THIS TO BE 1/8" MIN. RADIUS
IF THIS IS 1/4" RADIUS
THIS TO BE 1/8" MIN. RADIUS
(DIE STAMPED DROP-IN DRAWERS ARE MOST EASILY CLEANED)

4.38—Drawers and Bins


NOTE: BINS SHALL BE IN A TOTALLY ENCLOSED SPACE. WHERE IN THE OPEN - COVERS MUST BE PROVIDED.
INTERNAL CORNERS 1/8" RAD. MINIMUM
BINS MUST BE REMOVABLE FOR CLEANING
SEAMED OR WELDED ENDS AS SPECIFIED

4.38—Tilting Bins

4.38 DRAWERS AND BINS: All drawers, bins, and drawer carriages shall be made readily removable for cleaning. Bins for food ingredients are to be in a totally enclosed space, or when not enclosed, to be provided with a tight-fitting cover. Food ingredient containers including portable food containers shall have tight-fitting covers and comply with Item 3.01.



TYPICAL

CUTLERY BOXES TO BE CONSTRUCTED SO THAT SILVERWARE CAN BE PICKED UP BY HANDLES ONLY

4.39—Silver Dispensers

4.39 SILVER (FLATWARE) DISPENSERS: All containers used for dispensing flatwear shall be readily removable for cleaning and shall be easily cleanable. They shall be so constructed that flatware can be picked up by the handles only, and the other portions of the flatware covered and protected from handling.

4.40 DISPLAY CASES:* Display cases shall be fabricated in such a manner as to eliminate dust collecting projections or moldings and minimize open joints and sharp corners. Where sliding doors are used to enclose one or more sides of a display case, they shall be readily removable. Hinged or pivoted-type doors need not be removable when designed so that thorough cleaning may be effected.

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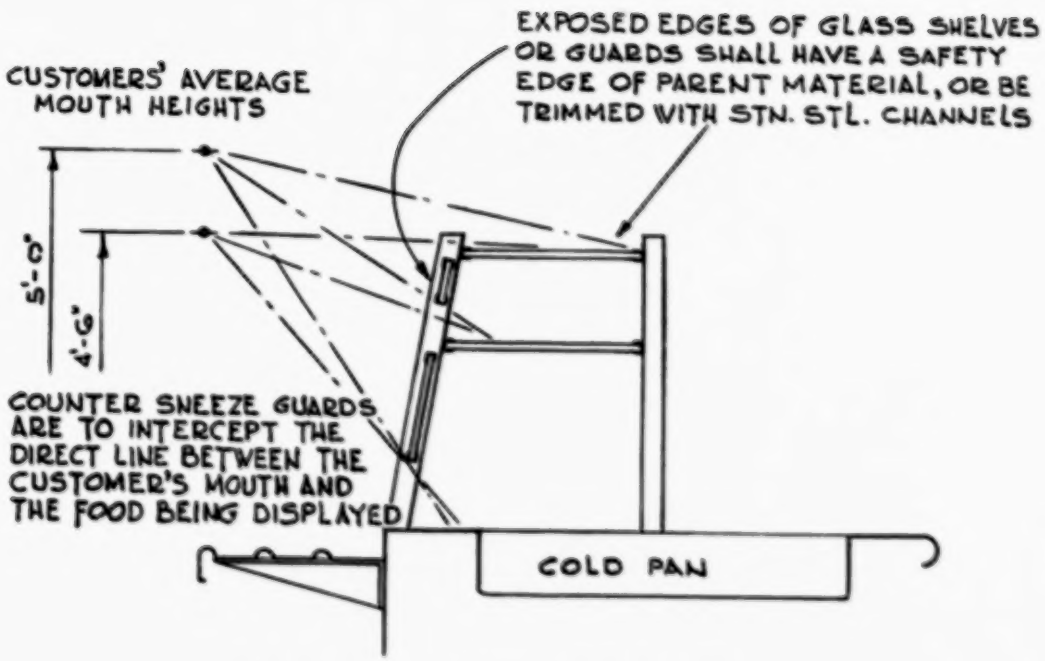
* Note: Refrigerated display cases shall comply with the provisions of NSF Standard No. 7 relating to Commercial Refrigerators and Storage Freezers. Provided, however, that a 100% operating time shall be permitted under the specified test procedures. Heated display cases shall comply with NSF Standard No. 4 relating to Cooking and Warming Equipment (Electric & Gas).


EXPOSED EDGES OF GLASS SHELVES OR GUARDS SHALL HAVE A SAFETY EDGE OF PARENT MATERIAL, OR BE TRIMMED WITH STN. STL. CHANNELS
CUSTOMERS' AVERAGE MOUTH HEIGHTS
5'-0"
4'-6"
COUNTER SNEEZE GUARDS ARE TO INTERCEPT THE DIRECT LINE BETWEEN THE CUSTOMER'S MOUTH AND THE FOOD BEING DISPLAYED
COLD PAN

4.41—Guards on Counter Display Cases

4.41 COUNTER GUARDS: Display stands for unpackaged foods are to be effectively shielded so as to intercept the direct line between the average customer's mouth and the food being displayed.

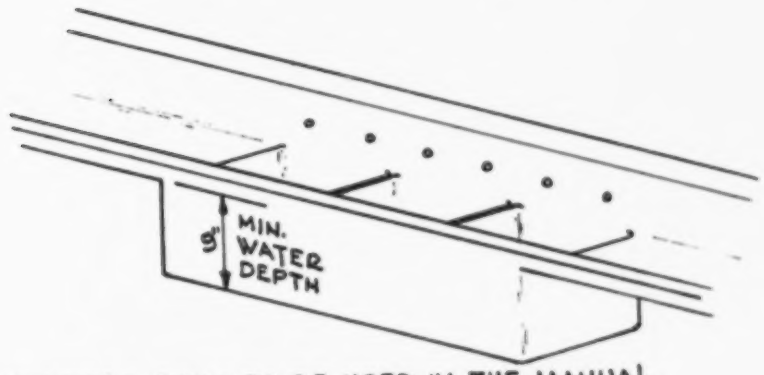
4.411 Guards shall be mounted so as to intercept a direct line between the customer's mouth and the food display area at the customer "use" position. The vertical distance from the average customer's mouth to the floor shall be considered to be 4 feet 6 inches to 5 feet for public eating establishments. Special consideration must be given to the average customer's mouth height in educational institutions and other special installations.

4.412 Such guards are to be fabricated of easy-to-clean, sanitary materials conforming to MATERIALS specifications (Item 3.00 & 3.02).

4.413 Where the edges of glass or other hazardous materials are exposed, they are to be trimmed with a smooth protective member, have a safety edge of parent material, or be of a material which does not present a hazard in this connection. For standard or bracket specification, see Item 4.28.

4.42 SELF-LEVELING STORAGE SYSTEMS: Parts of the leveling mechanism, system, or device which are not fully protected against dirt, splash, spillage or contact with food shall be easily cleaned.

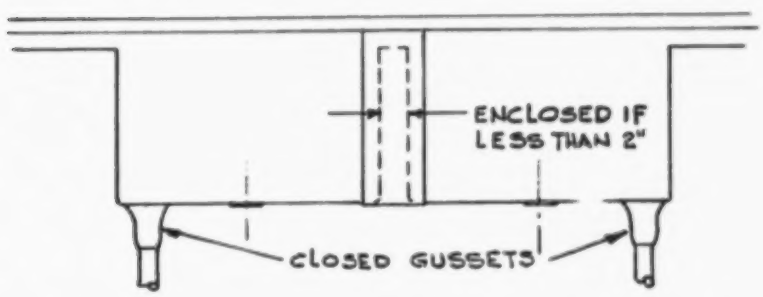
MINIMUM OPENING DIMENSION FOR EACH SINK 12" x 12" WITH MINIMUM WATER CAPACITY OF 6 GALLONS BELOW THE OVERFLOW LEVEL



MULTIPLE SINKS TO BE USED IN THE MANUAL WASHING OF EATING & DRINKING UTENSILS. AT LEAST 3 UNITS OR BASINS SHALL BE PROVIDED.

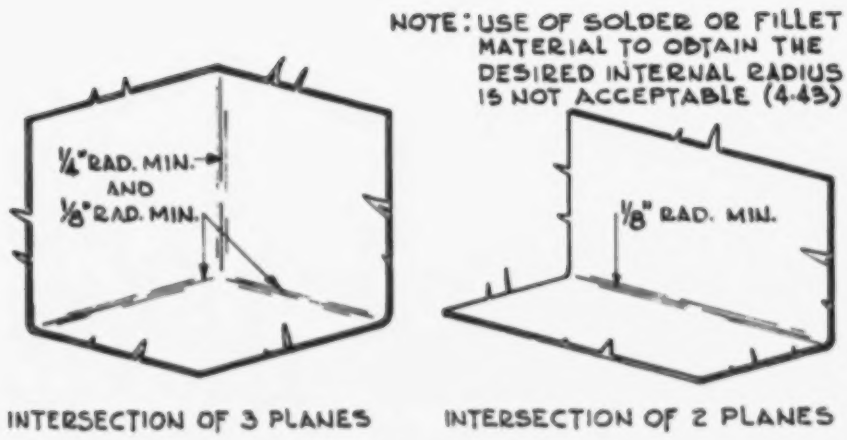
4.43—Sinks

EXAMPLE OF ENCLOSED SPACE WHEN SPACE EXISTS BETWEEN SINK BODIES - FRONT, BOTTOM AND BACK OF OPENING MUST BE ENCLOSED TO EXCLUDE VERMIN



FRONT ELEVATION - 2 COMPARTMENT SINK

4.43—Enclosed Spaces—Sinks

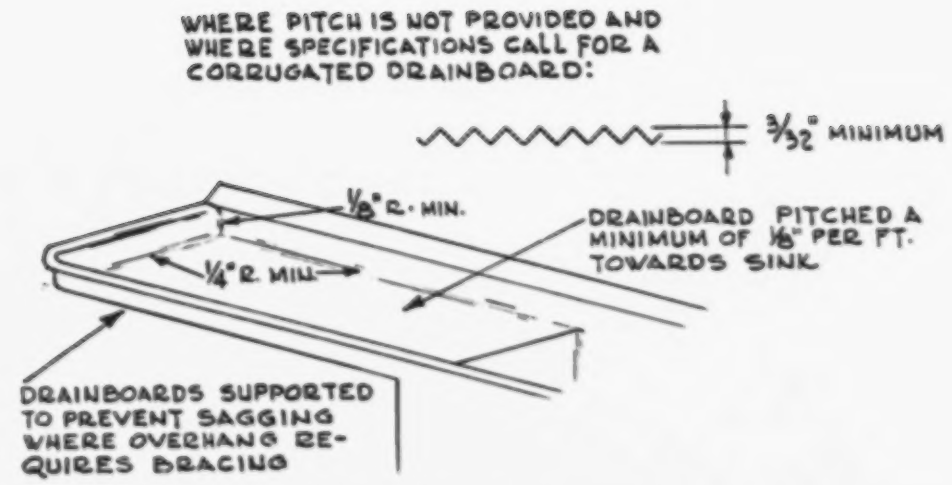

NOTE: USE OF SOLDER OR FILLET MATERIAL TO OBTAIN THE DESIRED INTERNAL RADIUS IS NOT ACCEPTABLE (4.43)
1/4" RAD. MIN.
AND
1/8" RAD. MIN.
1/8" RAD. MIN.
INTERSECTION OF 3 PLANES
INTERSECTION OF 2 PLANES

4.43—Sinks

4.43 SINKS: Sinks or sink bowls including partitions shall be considered food zone and shall be drawn or welded and made smooth, or otherwise fabricated to conform with Items 4.031 and 4.032. The use of solder or fillet material to obtain the desired radius is not acceptable. The space between the bowls or compartments of sinks shall be completely filled, the space sealed, or a minimum clear space of 2 inches shall be provided between the bowls or compartments which shall be open at front, bottom, and back of sink. Sinks shall be built in accordance with the requirements of this Standard for Materials and Workmanship (applicable Items 4.00 through 4.34).

4.44 DISHTABLES AND DRAINBOARDS: Dishtables and drainboards shall be drawn or welded and polished to conform with Items 4.031 and 4.032. The use of solder or fillet material to obtain the desired radius is not acceptable. Dishtables and drainboards shall have turned up edges not less than 1/2 inch and a minimum pitch of 1/8 inch per foot. Drainage shall be so directed as to prevent contamination of other areas of the dishtable or drainboard. Dishtables and drainboards shall be supported in such manner as to prevent sagging, shall be integral with sinks, and shall comply with Items 4.08 and 4.21.

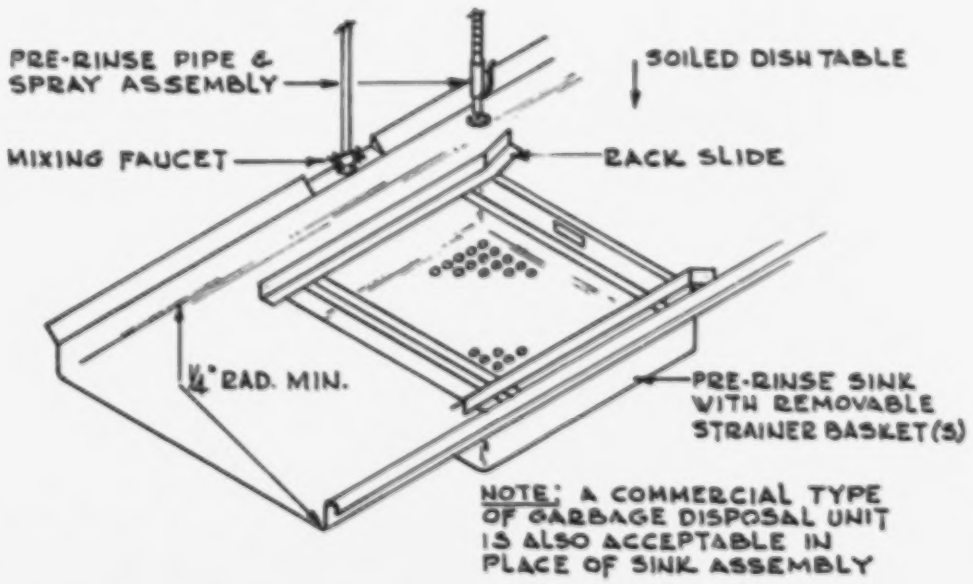
4.441 SOUND DAMPING: Dishtables and drainboards when required to be sound dampened shall have such damping materials applied in a manner that no dirt or debris will collect and adhere thereto, and the surface will be non-absorbent and easily cleanable.


WHERE PITCH IS NOT PROVIDED AND WHERE SPECIFICATIONS CALL FOR A CORRUGATED DRAINBOARD:
3/32" MINIMUM
1/8" R. MIN.
1/4" R. MIN.
DRAINBOARD PITCHED A MINIMUM OF 1/8" PER FT. TOWARDS SINK
DRAINBOARDS SUPPORTED TO PREVENT SAGGING WHERE OVERHANG REQUIRES BRACING

4.44 - 4.451—Drainboards

4.45 DRAINBOARD SPACE: A physically separated drainboard space shall be provided for clean and soiled utensils.

4.451 DIVIDED DRAINBOARD: A section to be used for clean utensils raised at least ½ inch above a section for dirty utensils shall be acceptable.


PRE-RINSE PIPE & SPRAY ASSEMBLY
SOILED DISH TABLE
MIXING FAUCET
RACK SLIDE
1/4" RAD. MIN.
PRE-RINSE SINK WITH REMOVABLE STRAINER BASKET(S)
NOTE: A COMMERCIAL TYPE OF GARBAGE DISPOSAL UNIT IS ALSO ACCEPTABLE IN PLACE OF SINK ASSEMBLY

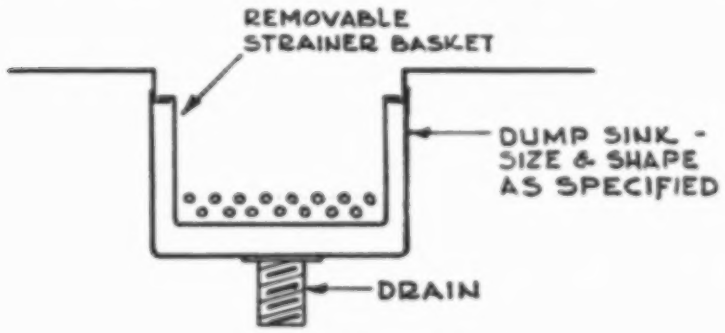
PREFERRED METHOD OF PRE-WASHING SOILED DISHES & UTENSILS — WHEN SPECIFIED

4.46 - 4.464—Pre-Wash Equipment

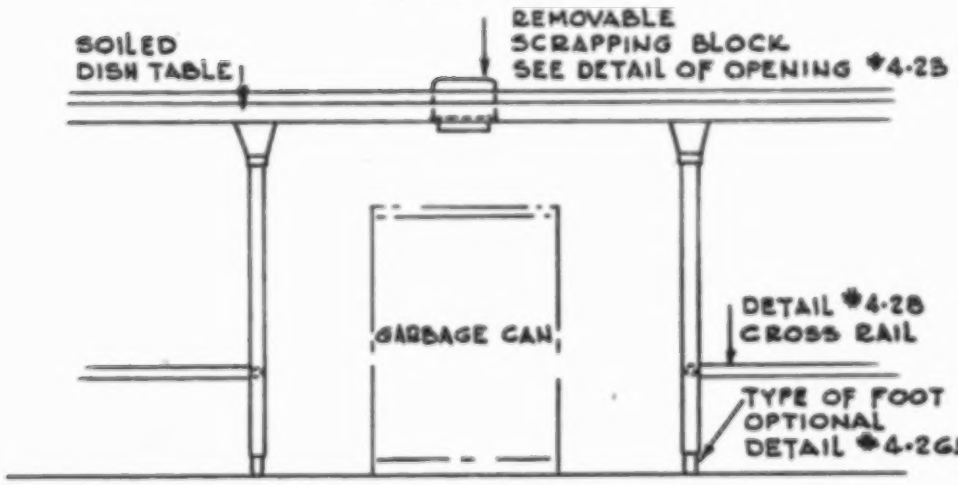
Note: Special attention must be given the adequacy of drainboard space both soiled and clean to assure proper safeguards against contamination of clean utensils, breakage due to lack of landing space for soiled utensils, and performance of the planned tasks at the location.

4.46 UTENSIL AND DISH CLEANING FACILITIES: Specially designed and fabricated equipment when provided to promote and facilitate utensils and dish cleaning shall conform to the following specific requirements:

4.461 DUMP SINKS: Sinks used for the disposal of leftover liquids and solids from soiled utensils and/or collecting other debris shall be fitted with removable strainer baskets.



4.461—Dump Sink

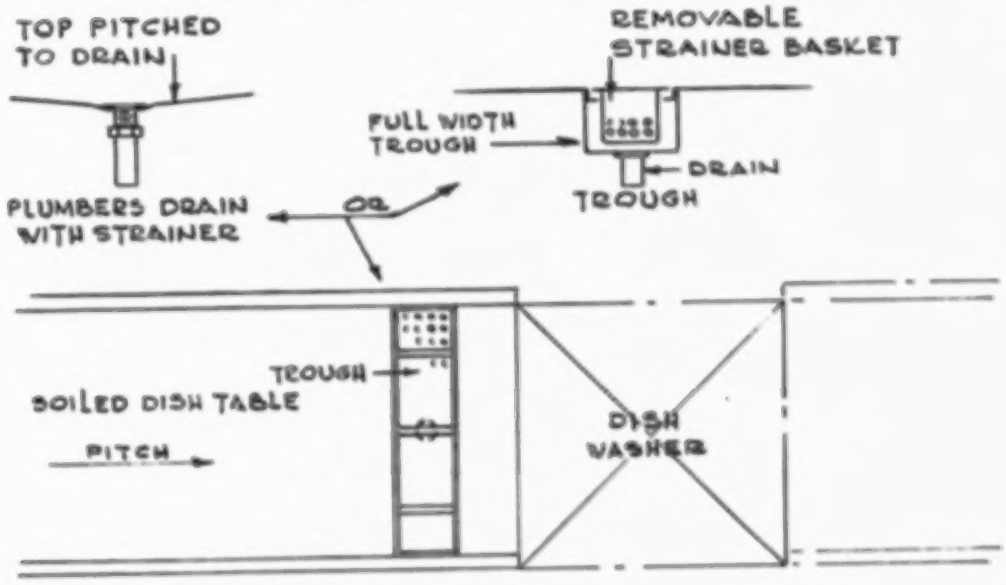


4.462—Scrapping Blocks

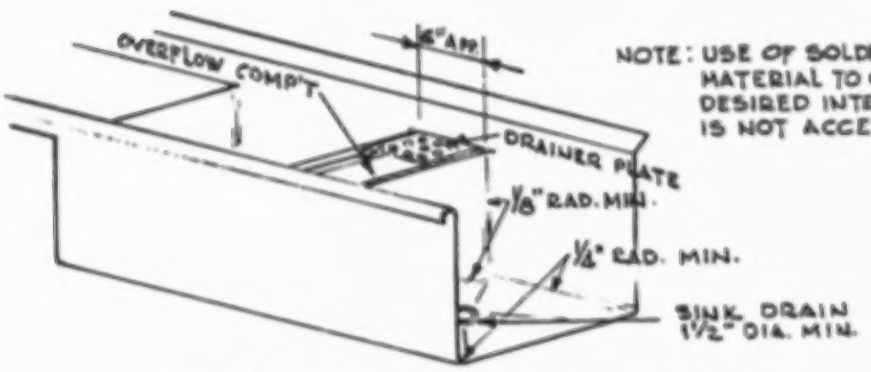
4.462 SCRAPPING BLOCKS: Scrapping blocks shall be made removable. The construction shall be such as to prevent refuse from falling outside the garbage receptacle. If garbage containers are required, the space provided shall be free of structural angles, protruding ledges, crevices, and other dirt catchers, and the space shall be such as can be readily inspected, cleaned, and washed.

4.463 TABLE SCUPPERS: Table scuppers shall be across the entire flat section of the table to prevent soiled water and debris from draining into the wash tank or dishwashing machine or other compartments. Two types may be used, namely, standard plumbing drains with strainers or fabricated troughs with removable baskets.

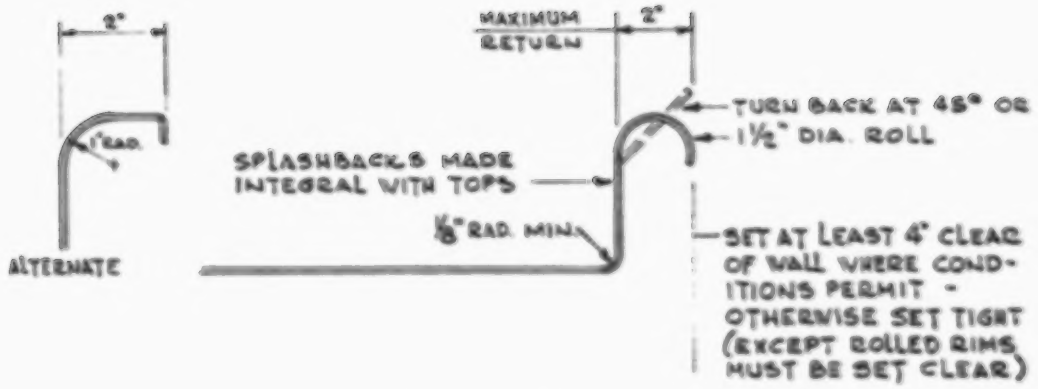
4.464 TABLE SCUPPERS AND DUMP SINKS: Table scuppers and dump sinks shall be drawn or welded and polished to conform with Items 4.031 and 4.032.



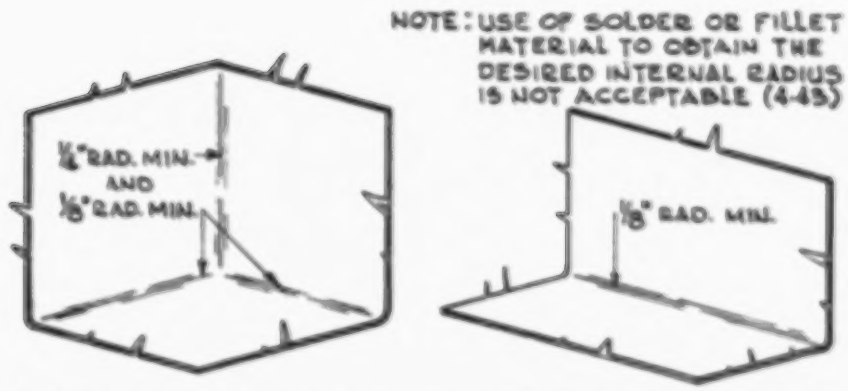
4.464—Table Scuppers


OVERFLOW COMP'T
6" APP.
DRAINER PLATE
1/8" RAD. MIN.
1/4" RAD. MIN.
SINK DRAIN 1 1/2" DIA. MIN.
NOTE: USE OF SOLDER OR FILLET MATERIAL TO OBTAIN THE DESIRED INTERNAL RADIUS IS NOT ACCEPTABLE
WHERE OVERFLOW BETWEEN SINK COMPARTMENTS IS SPECIFIED - A REMOVABLE DRAINER PLATE OR PERFORATED BASKET SHALL BE PROVIDED UNLESS OTHERWISE SPECIFIED.

4.464—Table Scuppers & Dump Sinks


2"
1" RAD.
ALTERNATE
MAXIMUM RETURN
2"
TURN BACK AT 45° OR
1½" DIA. ROLL
SPLASHBACKS MADE INTEGRAL WITH TOPS
⅛" RAD. MIN.
SET AT LEAST 4" CLEAR OF WALL WHERE CONDITIONS PERMIT - OTHERWISE SET TIGHT (EXCEPT ROLLED RIMS MUST BE SET CLEAR)

4.47—Splashbacks


NOTE: USE OF SOLDER OR FILLET MATERIAL TO OBTAIN THE DESIRED INTERNAL RADIUS IS NOT ACCEPTABLE (4-49)
¼" RAD. MIN. AND ⅛" RAD. MIN.
⅛" RAD. MIN.
INTERSECTION OF 3 PLANES
INTERSECTION OF 2 PLANES

4.47—Splashbacks

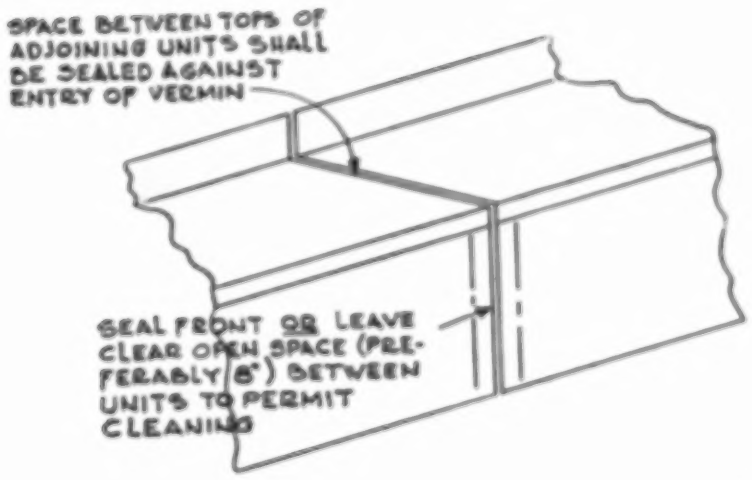
4.47 SPLASH BACKS: Wherever used, metal splash backs shall be formed integral with tops or formed separately and integrally welded. Flat turned back flanges at top of splash backs shall be as narrow as possible, preferably less than 1 inch or no return. If the turn back is greater than 1 inch, the turn back shall be at a 45 degree angle. Wherever applications permit, turned back flanges are to be at a 45 degree angle.

4.48 TOPS OF COUNTERS, TABLES, AND BACK BARS: Tops, if exposed, shall be in one piece or all seams shall be welded, ground, and made smooth, provided that field joints shall comply with Item 4.21.

EXPOSED TOPS SHALL BE IN ONE PIECE IF SPECIFIED OR ALL SEAMS SHALL BE FILLED AND MADE SMOOTH.

WHERE TOP BUTTS ADJACENT EQUIPMENT - TOP IS TO HAVE INTEGRAL SPLASHBACK OR RIM - SEE DETAILS 4.21 AND 4.47

4.48—Tops of Counters, Tables & Back Bars

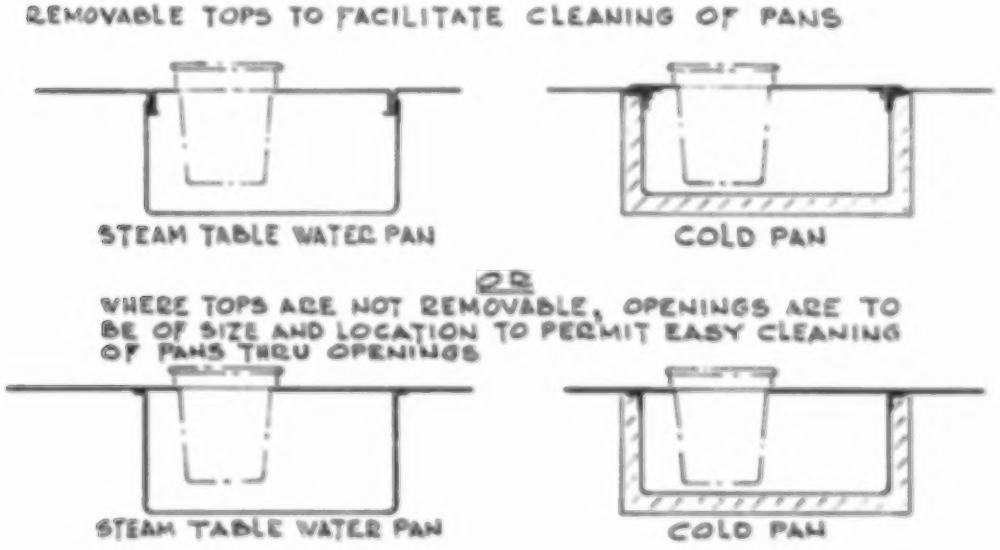

SPACE BETWEEN TOPS OF ADJOINING UNITS SHALL BE SEALED AGAINST ENTRY OF VERMIN
SEAL FRONT OR LEAVE CLEAR OPEN SPACE (PREFERABLY 6") BETWEEN UNITS TO PERMIT CLEANING

4.48—Trimming & Sealing Openings in Counter Tops & Bodies

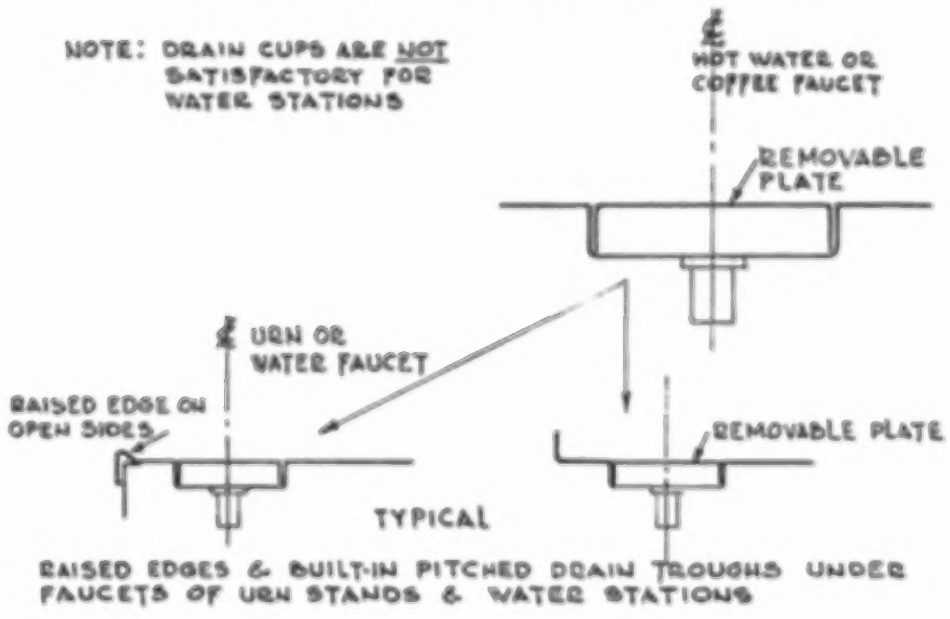
4.49 TOPS OF STEAM TABLES WITH WATER PANS AND TABLES WITH COLD PANS: To facilitate easy cleaning of interiors, where practical steam table tops and the tops of tables with cold pans shall be removable. Where such tops are not made removable, they shall have openings of a size and location that will permit complete access for cleaning the entire interior through such openings.

4.50 URN STANDS: Urn stands shall have built-in pitched troughs equipped with non-splash type removable drain plates beneath dispensing faucets. Said trough shall be provided with a 1 inch I.P.S. drain connection or removable drain cup. Edges of punched slots

and openings shall be made smooth. Wherever necessary to prevent overflow onto the floor or other units, edges shall be raised as required in Item 4.22.


REMOVABLE TOPS TO FACILITATE CLEANING OF PANS
STEAM TABLE WATER PAN
COLD PAN
OR
WHERE TOPS ARE NOT REMOVABLE, OPENINGS ARE TO BE OF SIZE AND LOCATION TO PERMIT EASY CLEANING OF PANS THRU OPENINGS
STEAM TABLE WATER PAN
COLD PAN

4.49—Tops of Steam Tables With Water Pans & Cold Pans

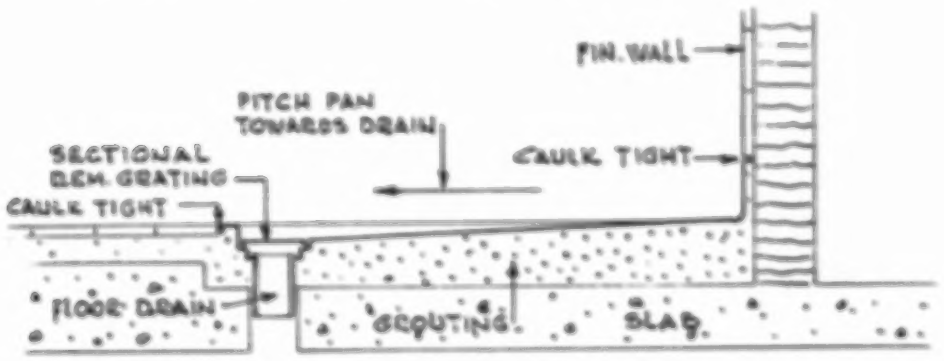

NOTE: DRAIN CUPS ARE NOT SATISFACTORY FOR WATER STATIONS
HOT WATER OR COFFEE FAUCET
REMOVABLE PLATE
URN OR WATER FAUCET
RAISED EDGE ON OPEN SIDES
REMOVABLE PLATE
TYPICAL
RAISED EDGES & BUILT-IN PITCHED DRAIN TROUGHS UNDER FAUCETS OF URN STANDS & WATER STATIONS

4.50 & 4.51—Urn Stands & Water Stations

4.51 WATER STATIONS: Water stations shall be constructed in accordance with Item 4.50. The waste lines from such stations shall not drain into the food product zone.

4.52 DIPPER WELLS: All wells for ice cream or other dippers shall be equipped with running water. There shall be no rough or open seams. The top dimensions of the well shall be not less than 4 inches by 4 inches, and every interior angle shall have a radius of not less than 1/8 inch. Separating partitions of dipper wells shall be readily removable for cleaning. Any over-flow standpipe shall be accessible for brushing and cleaning.

4.521. WATER PIPES: Water pipes shall comply with the provisions of the National Plumbing Code ASA A40.8-1955 which states that the air gap in a water supply system is the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank or plumbing fixture and the flood level rim of receptacle; and further that the minimum required air gap shall be twice the diameter of the effective opening, but not less than 1 inch.

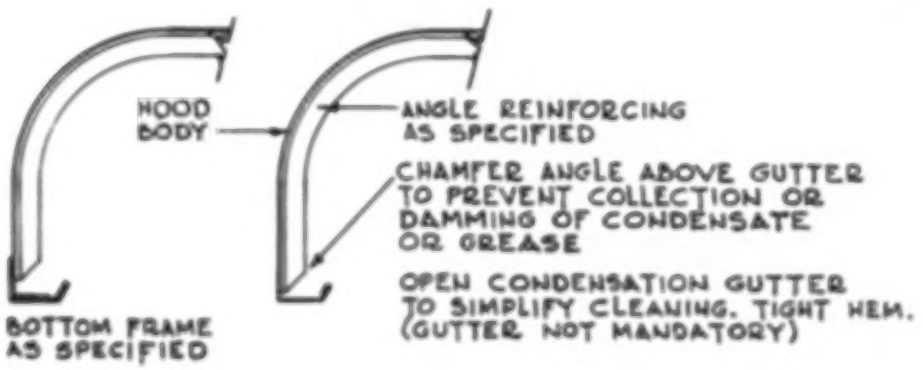


4.53—Drip Pan

4.53 DRIP PANS: Drip pans for kettles and steamers and similar equipment shall be depressed and sealed. Bottoms of such pans shall be pitched to drains with removable strainers. Raised blocks, when provided, shall be made of metal identical to the drip pan and shall be continuously welded thereto to prevent seepage under the drip pan. All such blocks shall be of a height equal to that of the drip pan. Any holes drilled into the blocks shall be made water-tight. Drip pans shall be constructed in accordance with the requirements of Item 4.03.

4.54 CANOPIES OR HOODS: All canopies and hoods shall have hard, smooth inner surfaces that are smooth and easily cleanable. Where reinforcing must be on the interior, it shall be smooth, easily

cleaned, and so used that it will not act as a dam or create a surface on which grease or condensate will collect and drip. Gutters, when provided, shall be smooth, easily cleanable, and fitted with a drain or clean-out opening.

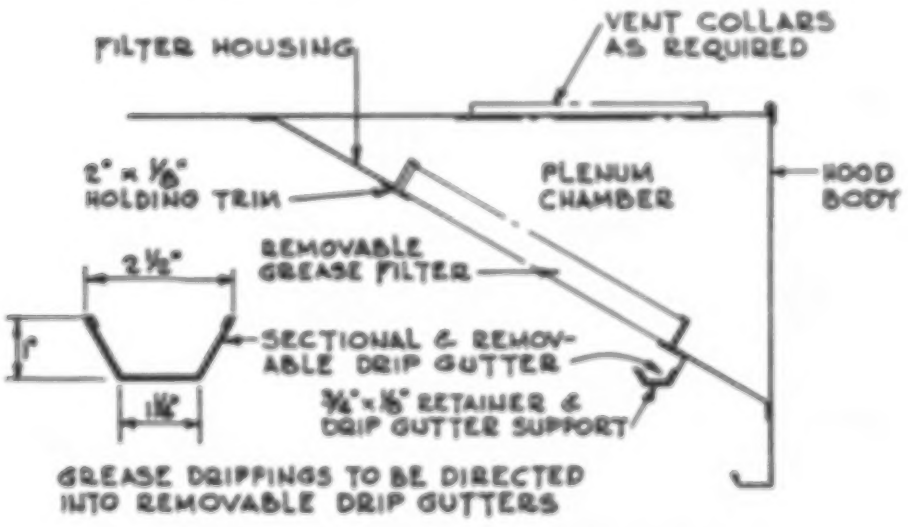

HOOD BODY
ANGLE REINFORCING AS SPECIFIED
CHAMFER ANGLE ABOVE GUTTER TO PREVENT COLLECTION OR DAMMING OF CONDENSATE OR GREASE
OPEN CONDENSATION GUTTER TO SIMPLIFY CLEANING. TIGHT HEM. (GUTTER NOT MANDATORY)
BOTTOM FRAME AS SPECIFIED

4.54 - 4.544—Hoods or Canopies

4.541 CURTAIN TYPE: The interior of the hood shall be in accordance with Item 4.11.

4.542 OPEN TYPE HOODS: Hoods shall have smooth, easily cleanable interiors. Where gutters are built into bottom edges, they shall be of a size and design to make cleaning easy.

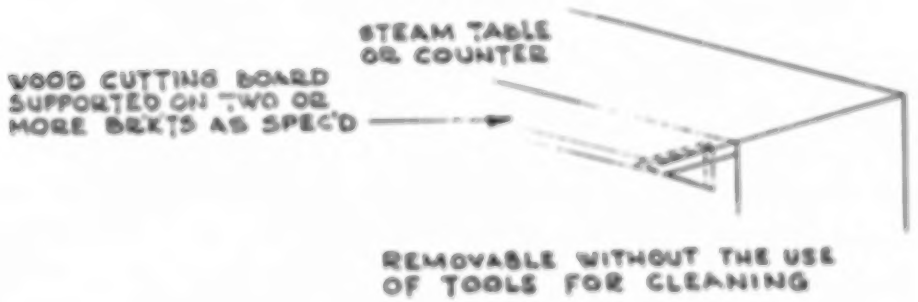
4.543 PLENUM TYPE HOODS—WITH FILTERS: Where filters are used in hoods, they shall be easily removable and so installed as to prevent drippage into food products.


FILTER HOUSING
VENT COLLARS AS REQUIRED
2" x 1/8" HOLDING TRIM
PLENUM CHAMBER
HOOD BODY
2 1/2"
REMOVABLE GREASE FILTER
SECTIONAL & REMOVABLE DRIP GUTTER
3/4" x 1/8" RETAINER & DRIP GUTTER SUPPORT
GREASE DRIPPINGS TO BE DIRECTED INTO REMOVABLE DRIP GUTTERS

4.543—Plenum Type Hoods—With Filters

4.544 PLENUM TYPE HOODS—WITHOUT FILTERS: Where baffles, turning vanes, and sliding dampers are used for the purpose of controlling air volume, they shall be easily accessible or removable and easily cleanable.

4.55 CUTTING BOARDS: All cutting boards used on food service equipment shall be of such size as to be portable and shall be readily removable for cleaning. Wood cutting boards used on food service units shall, in addition, conform to the following requirements:


STEAM TABLE OR COUNTER
WOOD CUTTING BOARD SUPPORTED ON TWO OR MORE BRKTS AS SPEC'D
REMOVABLE WITHOUT THE USE OF TOOLS FOR CLEANING

4.55 - 4.555—Cutting Board

4.551 LAMINATION: Size shall be 1⅞ inch maximum on edge grain.

4.552 MACHINING: Machining of surfaces shall be to .001 inch and bonded within a period of time to assure this tolerance.

4.553 BONDING: Surfaces to be bonded shall be in intimate contact at controlled pressures ranging from 150 p.s.i. minimum to 250 p.s.i. maximum.

4.554 REINFORCEMENT: All edge grained laminated surfaces shall be reinforced with steel bolts set at a maximum distance of 30 inches center to center and 4 inches from the end with bolt heads drawn tight on steel washers and countersunk in the outer edge laminates. Outer edge laminates to be thick enough to hold countersink and then be covered with flush rossettes using adhesive and force fit. Tops and boards under 1¾ inches in thickness and/or under 48 inches in length and/or under 18 inches in width do not require bolt reinforcement. Minimum bolt diameter ⅜ inch.

4.555 FINISHING-MACHINING: Top, edge, and end surfaces shall be planed and sanded smooth to a .010 inch tolerance with no checks, open knots, open lamination joints, or other open defects. All cutting surfaces shall be treated to effect sealing.

SECTION 5. WHEELED FOOD SERVICE EQUIPMENT

5.00 GENERAL: Wheeled food service equipment shall be constructed to comply with applicable Items of Sections 1, 2, 3, and 4 and in addition the following specific items:

5.01 PAN WELLS: In all food carts, wells for pans shall be constructed with coved corners to facilitate cleaning and shall meet the construction requirements of Items 4.031 and 4.032.

5.02 CLEANING (AUTOMATIC): When equipment is to be subjected to automatic cleaning methods, horizontal projections and other obstacles which prevent self-draining shall be eliminated. Manufacturer's recommendations for cleaning and maintenance shall be provided.

5.03 DRAINS: Wheeled equipment shall not be required to have drains; however, if provided, they shall comply with the applicable requirements therefor.

SECTION 6. CONVEYORS

6.00 CONVEYORS: Conveyors shall be constructed to comply with applicable Items of Sections 1, 2, 3 and 4 in addition to the following specific items:

6.01 MATERIALS: Belt materials shall be non-toxic, oil proof, and of such construction that raw edges and sides will be sealed, and the belt shall be relatively non-absorbent. Belt lacings or fastenings shall meet the applicable cleanability requirements for food, splash, and non-food zones.

6.02 MECHANICAL CLEANING DEVICES: Mechanical cleaning devices (wet or dry) for conveyors shall be made readily accessible for cleaning.

6.03 CLEANABILITY: Waste pans and housing areas shall be readily accessible for cleaning.

6.031 Conveyor belt, belt support pan, rollers, driving mechanism, and pulleys shall be readily accessible for cleaning.

6.032 The base of conveyor units shall have readily removable access panels to permit cleaning.

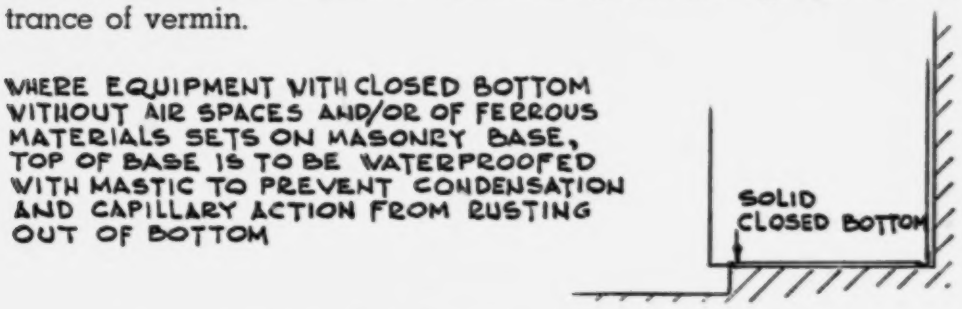
6.033 Readily removable catch pans of proper design and adequate capacity shall be provided wherever spillage, splash, and similar debris may accumulate. Food waste collection and disposal stations shall be designed, constructed, and equipped to facilitate the collection and/or disposal of food wastes in an acceptable manner and to be easily cleaned.

6.04 DRAINS: Drains when provided in connection with conveyors for soiled dishes shall be equipped with readily removable strainer baskets or similar device.

6.05 MOTORS: Motors shall be so located as to be protected against splash, spillage, and the like, or to be otherwise protected.

RECOMMENDATIONS FOR INSTALLATION

A. ALTERNATE INSTALLATION: In lieu of providing six inches or more of clear space under equipment, the stationary equipment may be placed on a raised solid masonry or entirely sealed metal platform at least two inches high which is sealed to the floor and sealed at all edges; or if suitably designed, the equipment itself may be sealed to the floor to prevent mop water or spillage from accumulating therein or thereunder. Equipment installed on an island may be so placed as to overlap the island to allow toe space. Necessary space for air intake should be provided for such units requiring air for ventilation and/or combustion. When such air intake openings are provided, they shall be screened with 16 mesh or equal in a readily removable frame or otherwise protected against the entrance of vermin.


WHERE EQUIPMENT WITH CLOSED BOTTOM WITHOUT AIR SPACES AND/OR OF FERROUS MATERIALS SETS ON MASONRY BASE, TOP OF BASE IS TO BE WATERPROOFED WITH MASTIC TO PREVENT CONDENSATION AND CAPILLARY ACTION FROM RUSTING OUT OF BOTTOM
SOLID CLOSED BOTTOM

Installation Detail—Masonry Bases Under Equipment

B. MULTIPLE UNIT INSTALLATION OF COUNTER OR BENCH APPLIANCES: In group installations of units on the same or adjoining counters, benches, or tables, (in closely spaced arrangements) units shall be arranged or spaced on the counter, bench or table so that the combined units, when so installed, will comply with Paragraph 4.264.

C. SPACE BEHIND, BETWEEN AND BESIDE UNITS: Equipment, other than readily removable equipment, should be installed with sufficient unobstructed space behind equipment and between adjacent equipment and walls to permit cleaning, or the equipment sealed to the wall. The width of the space to be provided is dependent upon the distance from either end to the farthest point requiring cleaning.

1. When the distance to be cleaned is less than 2 feet in length, the width of the clear unobstructed space should not be less than 6 inches.

2. When the distance to be cleaned is greater than 2 feet, but less than 4 feet in length, the width of the clear unobstructed space should not be less than 8 inches.

3. When the distance to be cleaned is greater than 4 feet, but less than 6 feet in length, the width of the clear unobstructed space should not be less than 12 inches.

4. When the distance to be cleaned is greater than 6 feet, the width of clear unobstructed space should be 18 inches.

D. SERVICE CONNECTIONS: The connection of services should be made so as to minimize horizontal runs of pipe, conduit, or wire which may interfere with necessary regular cleaning of the space between the bottom of any unit and the supporting surface. The obstruction of any space between units or between any unit and the wall which requires cleaning should be avoided. Unless equipment requiring drains is so designed as to protect against backflow into the product zone and complies with local plumbing requirements, drains from such equipment should be connected so as to prevent such sewage backflow. All electrical wiring and connections required for installation should comply with local electrical code requirements.

E. OTHER INSTALLATION RECOMMENDATIONS: The following recommendations are included pertaining to installation of special types or items of equipment:

E-1 Cantilevered installation of food equipment may use any combination of mastic, screws, and tension if it prevents liquid waste from running down between the equipment and the wall.

E-2 In the setting of drip pans, care must be taken that the entire surface underneath is covered with soft cement grouting so that the grout chips adhere to the cement when the pan is leveled and weighed down. Then fill in around outer edge so that nothing can get under the pan.

E-3 TRIMMING AND SEALING OPENINGS: Where exposed, the space between all adjoining units not portable and with enclosed bodies shall be completely sealed against the entrance of food particles, insects, or other matter. Otherwise a clear cleaning space shall be provided between such units to make cleaning possible. Where equipment of irregular height is installed adjacent to each other a T-mold strip may be used to provide proper sealing of spaces between units.

F. INSTALLATION OF SPLASH BACKS: Wherever possible all splash backs are to be set at least 3 inches away from adjacent surfaces. Otherwise they are to be installed as to prevent the formation of harborages. Exposed tops (flanges) or splash backs, where against adjacent surfaces, are to be set tight, and the joint into the wall sealed.

SUGGESTIONS CONCERNING REGULATIONS GOVERNING THE SANITATION OF FOOD SERVICE EQUIPMENT AND APPURTENANCES

It is strongly recommended that these Standards representing a cross-section of opinion of workers in the field of environmental health be accepted and followed by enforcement officials. However, their incorporation in detail into local sanitary codes does not appear to be necessary and is likely to be cumbersome.

In municipalities, counties, and health districts in which the adoption of legislation by reference is considered legal, the following regulation should serve to implement the use of the Standard for Food Service Equipment and Appurtenances.

ALL FOOD SERVICE EQUIPMENT AND APPURTENANCES INSTALLED ON OR AFTER _____ IN PUBLIC FOOD SERVICE ESTABLISHMENTS IN THIS JURISDICTION SHALL MEET THE NATIONAL SANITATION FOUNDATION STANDARDS FOR SUCH EQUIPMENT, or, if considered desirable, it will be simpler to adopt the following more general regulation applying to all standards in the food service field:

ALL EQUIPMENT INSTALLED ON OR AFTER _____ FOR USE IN THE PREPARATION OF FOOD IN FOOD SERVICE ESTABLISHMENTS IN THIS JURISDICTION SHALL MEET NATIONAL SANITATION FOUNDATION STANDARDS.

In fact, the adoption of this broad regulation will save time as well as advertising and printing costs, as, no doubt, many different standards will be adopted. Otherwise, each standard will require the adoption of a specific regulation. Wherever the legality of adopting legislation by reference is not recognized, delete the portion of either of the above regulations after the word "SHALL" and substitute therefore the words "BE OF A TYPE APPROVED BY THE HEALTH OFFICER." The health officer may be guided by the National Sanitation Foundation Standards in his approval of types.

INDEX

This index covers references to those items included under Section 4—Design and Construction; Section 5—Wheeled Food Service Equipment, and Section 6—Conveyors. The General Section is found on Pages 10 and 11, Definitions on Pages 11 through 13, and Materials on Pages 13 through 15.

ITEM		PAGE
4.282	Brackets	28
4.25	Breaker Strips	26
4.262	Casters-Rollers-Gliders	26
4.01-6.03	Cleanability	16-48
5.02	Cleaning (Automatic)	48
6.00	Conveyors	48
4.03	Corners and Angles—Internal	16
4.04	Corners and Angles—Other than Metal	17
4.05	Corners and Angles—External	17
4.264	Counter and Table Units	26
4.41	Counter Guards	36
4.27	Counter Steps and Platforms	28
4.29	Counter Tray Slides	28
4.55	Cutting Boards	47
4.551	Cutting Boards—Lamination	47
4.552	Cutting Boards—Machining	47
4.553	Cutting Boards—Bonding	47
4.554	Cutting Boards—Reinforcement	47
4.555	Cutting Boards—Finishing	48
4.52	Dipper Wells	45
4.44	Dishtables and Drainboards	38
4.441	Dishtables—Sound Damping	38
4.40	Display Cases	35
4.281	Display Stands	28
4.302	Diverting Shelves	29
4.451	Divided Drainboard	39
4.19	Doors and Covers	21
4.191	Doors—Without Insulation	21
4.192	Doors Insulated	22
4.193	Doors—Glass	22
4.194	Door Track and Guides	22
4.45	Drainboard Space	39
5.03-6.04	Drains	48-49
4.311	Drains and Overflows—Sinks	31
4.312	Drains for Steam Tables	32
4.38	Drawers and Bins	35
4.53	Drip Pans	45
4.461	Dump Sinks	40
4.341	Enclosed Spaces	33
4.20	Exposed Edges and Nosings	23
4.09-4.12	Fastening Methods	18
4.21	Field Joints	20

ITEM		PAGE
4.18	Finishing	20
4.16	Fixed Panels	20
4.35	Food and Flatware Containers and Drawers	33
4.02	Function	16
4.00-4.10-5.00	General Design and Construction	15-18-48
4.24	Hardware	25
4.54	Hoods—Canopies or Hoods	45
4.541	Hoods—Curtain Type	46
4.542	Hoods—Open Type	46
4.453	Hoods—Plenum Type-With Filters	46
4.544	Hoods—Plenum Type-Without Filters	47
4.37	Insets	30
4.303	Interior Fixed Shelving	30
4.08-4.11	Joints and Seams	17-18
4.261	Legs	26
4.26	Legs and Feet	26
4.2654.265	Legs and Feet—Design and Construction	26
4.17	Linings	20
6.01	Materials	48
6.02	Mechanical Cleaning Devices	48
6.05	Motors	49
4.28	Open Display Stands and Brackets	28
4.22	Openings and Rims Food Zone	24
4.23	Opening to Waste Receptacle	25
4.231	Opening to Food Waste Grinder	25
4.13	Paint	18
5.01	Pan Wells	48
4.34	Pipe Chases	32
4.33	Placement of Drainage Pipes	32
4.263	Portable	26
4.36	Pots, Pans and Utensils	34
4.15	Reinforcing and Framing	19
4.161	Removable Panels	20
4.301	Removable Shelving	29
	Recommendations for Installation	49
4.462	Scrapping Blocks	40
4.42	Self-Leveling Storage Systems	37
4.304	Shelf Brackets and Slides or Cleats	30
4.30	Shelving	29
4.39	Silver Dispensers	35
4.43	Sinks	38
4.06-4.14	Soldering	17-18
4.47	Splash Backs	42
	Suggestions Concering Regulations	52
4.463	Table Scuppers	41
4.464	Table Scuppers and Dump Sinks	41
4.48	Tops of Counters, Tables and Back Bars	42
4.49	Tops of Steam Tables	43
4.50	Urn Stands	43
4.46	Utensil and Dish Cleaning Facilities	40

ITEM		PAGE
4.31	Waste and Water Fittings	31
4.521	Water Pipes	45
4.51	Water Stations	44
4.07	Welding	17

SANITATION is a way of life. It is the quality of living that is expressed in the clean home, the clean farm, the clean business and industry, the clean neighborhood, the clean community. Being a way of life it must come from within the people; it is nourished by knowledge and grows as an obligation and an ideal in human relations.

THE NATIONAL SANITATION FOUNDATION